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JPRS 68249

23 November 1976

USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS  
BIOMEDICAL AND BEHAVIORAL SCIENCES  
No. 57



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Indexes to this report (by keyword, author, personal names, title and series) are available through Bell & Howell, Old Mansfield Road, Wooster, Ohio, 44691.

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<b>BIBLIOGRAPHIC DATA SHEET</b>	1. Report No. <b>JPRS 68249</b>	2.	3. Recipient's Accession No.																		
4. Title and Subtitle <b>USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS - BIOMEDICAL AND BEHAVIORAL SCIENCES, No. 57</b>		5. Report Date <b>23 November 1976</b>																			
7. Author(s)		6.																			
9. Performing Organization Name and Address <b>Joint Publications Research Service 1000 North Glebe Road Arlington, Virginia 22201</b>		8. Performing Organization Rept. No.																			
		10. Project/Task/Work Unit No.																			
		11. Contract/Grant No.																			
12. Sponsoring Organization Name and Address  <b>As above</b>		13. Type of Report & Period Covered																			
		14.																			
15. Supplementary Notes																					
16. Abstracts  The report contains abstracts on aerospace medicine, agrotechnology, bionics and bioacoustics, biochemistry, biophysics, environmental and ecological problems, food technology, microbiology, epidemiology and immunology, marine biology, military medicine, physiology, public health, toxicology, radiobiology veterinary medicine, behavioral science, human engineering, psychology, psychiatry and related fields.																					
17. Key Words and Document Analysis. 17a. Descriptors																					
<table border="0"> <tr> <td>USSR</td> <td>Medicine</td> </tr> <tr> <td>Eastern Europe</td> <td>Microbiology</td> </tr> <tr> <td>Aerospace Medicine</td> <td>Physiology</td> </tr> <tr> <td>Agrotechnology</td> <td>Psychology/Psychiatry</td> </tr> <tr> <td>Biology</td> <td>Public Health</td> </tr> <tr> <td>Botany</td> <td>Radiobiology</td> </tr> <tr> <td>Epidemiology/Immunology</td> <td>Toxicology</td> </tr> <tr> <td>Human Engineering</td> <td>Veterinary Medicine</td> </tr> <tr> <td>Marine Biology</td> <td></td> </tr> </table>				USSR	Medicine	Eastern Europe	Microbiology	Aerospace Medicine	Physiology	Agrotechnology	Psychology/Psychiatry	Biology	Public Health	Botany	Radiobiology	Epidemiology/Immunology	Toxicology	Human Engineering	Veterinary Medicine	Marine Biology	
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Biology	Public Health																				
Botany	Radiobiology																				
Epidemiology/Immunology	Toxicology																				
Human Engineering	Veterinary Medicine																				
Marine Biology																					
17b. Identifiers/Open-Ended Terms																					
17c. COSATI Field/Group      2, 5E, 5J, 6, 8A																					
18. Availability Statement <b>Unlimited Availability Sold by NTIS Springfield, Virginia 22151</b>		19. Security Class (This Report) <b>UNCLASSIFIED</b>	21. No. of Pages <b>116</b>																		
		20. Security Class (This Page) <b>UNCLASSIFIED</b>	22. Price <b>\$5.50</b>																		

23 November 1976

# USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS

## BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 57

This serial publication contains abstracts of articles from USSR and Eastern Europe scientific and technical journals on the specific subjects reflected in the table of contents.

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I. BIOMEDICAL SCIENCES  
Agrotechnology

USSR

UDC 581.133.5

VOROB'YEV, N.V., All-Union Scientific Research Rice Institute, Krasnodar

METABOLISM OF PHOSPHORUS COMPOUNDS AT THE INITIAL PERIOD OF RICE GERMINATION IN RELATION TO VARIOUS VIABILITIES OF THE SEEDS

Moscow FIZIOLOGIYA RASTENIY in Russian Vol 23 No 4 Jul/Aug 76 signed to press 17 Jun 75 pp 773-779

[Text-English language abstract supplied by source] Metabolism of phosphorus compounds and phytase activity were studied in embryos and endosperms of rice seeds with different viability during the first two days of their germination. The seed viability, characterized by the rate of their sprouting and growth of seedlings, is closely related to the content of phosphorus compounds, especially nucleic acids, in the embryos. Metabolism of phosphorus compounds and processes involving it begin earlier and are more intensive during germination of the seeds which contain high concentrations of phosphorus compounds. During the latent period, synthetic processes and metabolic reactions requiring phosphorus take place in the

1/2

USSR

VOROB'YEV, N.V., FIZIOLOGIYA RASTENIY Vol 23 No 4 Jul/Aug 76 pp 773-779

embryos mainly at the cost of reserve phosphates. Mobilization of phytin from the aleuron layer of the endosperm starts by the end of the first day of seed germination; its level is closely related to the rate of growth of the seedlings, this suggesting possible control by the embryo organs. Figure 1; Tables 3; References 25: 15 Russian, 10 Western).

2/2

USSR

UDC 576.353:58.037:581.43

NEMIROVICH-DANCHENKO, YE.N., and CHASTOKOLENKO, L.V., Department of Cytology and Genetics of the Tomsk State University, Scientific Research Institute of Biology and Biophysics at the Tomsk State University.

EFFECT OF ORIENTATION IN A GEOMAGNETIC FIELD AND OF AGE OF THE ROOTS ON MERISTEM MITOTIC ACTIVITY DURING THE ACTION OF AN ARTIFICIAL MAGNETIC FIELD

Moscow FIZIOLOGIYA RASTENIY in Russian Vol 23 No 4 Jul/Aug 76 signed to press 26 Jun 75 pp 829-854

[Text-English language abstract supplied by authors] The effect of an artificial magnetic field (MF) on the mitotic activity of the root meristem was studied with *Allium fistulosum* L., taking into account morphological isomery of the seeds, their orientation in the geomagnetic field (GMF), and the age of the roots during the action of the magnetic field. The response of the meristem to an increase in MF was detected by analysing the mitotic activity of the meristem cells in isomeric forms of onion during their orientation in GMF in experiments with additional action of

1/2

USSR

NEMIROVICH-DANCHENKO, YE.N., and CHASTOKOLENKO, L.V., FIZIOLOGIYA RASTENIY Vol 23 No 4 Jul/Aug 76 pp 829-854

magnetic field on roots of different age; the response may be registered by counting mitoses. Artificial MF was found to change the mitotic activity in various experiments before mass divisions took place in the root meristem. Artificial MF usually did not change the rhythm of mitotic activity after its activation and attainment of a certain optimum of divisions. Therefore, intracellular physiological and genetical factors, manifesting themselves upon definite orientation of the seeds in GMF, play the leading role in regulation of mitoses.

2/2

USSR

UDC 633.2/.4.003(47 + 57)+633.2/.4:  
631.582

SAVCHENKO, G. F., candidate of agricultural sciences, Poltava Experimental Agriculture Station

#### THE GREEN CONVEYOR AND FEED CROP ROTATION

Moscow ZHIVOTNOVODSTVO in Russian No 4, Apr 76 pp 41-44

[Abstract] In order to utilize lands more effectively where natural pastures are scarce, proper utilization of annual and perennial crops is required. Production of feeds using green crops must be balanced with silage and hay. The collective farm "Ukraine" in Poltava Oblast calculated the feed needs of its 3,000 head of cattle and prepared a crop rotation in 9 different crops: corn for green feeding, perennial grasses, winter grains for green feeding with subsequent corn planting, late varieties of corn with soy beans, annual grasses with later planting of feed crops, mid-season varieties of corn with soy beans, annual grasses with subsequent feed crop plantings, and corn of early varieties with Sudan grass. Other rotations suggested include rye and alfalfa among the crops to be planted, and also some beets and squash for feeding. Some of the results of this rotation scheme are to decrease losses in transporting green feeds, and to assure a constant supply, thereby reducing production costs in meat production. Tables 2.

1/1

USSR

SOBOLEV, O., Correspondent, Tadjik Telegraph Agency

#### GENETICS AGAINST WILT

Dushanbe KOMMUNIST TADZHIKISTANA in Russian 31 Aug 76 p 2

[Abstract] The section for general genetics of cotton of the Academy of Sciences of the Tadjik SSR has studied methods for preventing damages of wilt in cotton in the republic. Various varieties of wilt infect individual species and hybrids of cotton, so that investigations and genetic research has been directed at developing resistant strains of the predominant hybrid of the area, Tashkent x. Some fungi were found to infect both the Tashkent species and a second, 108-F, while others infected only the latter. In laboratory conditions, scientists are using ultraviolet light and gamma rays to induce mutant forms of the fungus to cause infection for the purpose of genetic investigations into resistant hybrids. The US experience of initially resistant varieties later becoming infested has led to development of substitute varieties

1/2

USSR

SOBOLEV, O., KOMMUNIST TADZHIKISTANA 31 Aug 76 p 2

of the Tashkent cotton hybrid. Highly sophisticated means of genetic alteration have produced cotton plants that are far different from the natural species. Genetic procedures can be combined with agrotechnical methods to assure high cotton yields. Useful results have been obtained by using wild Mexican cotton in combination with Tashkent-1.

2/2

USSR

UDC 636.087.8.002.612

KOSMACHEV, V. K., candidate in agricultural sciences, The Voronezh Branch of "Tsinao"

DEMANDS FOR HIGH QUALITY IN PREMIXED FEEDS MUST BE INCREASED

Moscow ZHIVOTNOVODSTVO in Russian No 6, Jun 76 pp 80-82

[Abstract] The creation of specialized premix enterprises is closely connected with problems of research in physiology, biochemistry and nutrition of agricultural animals in order to understand the proper vitamin, mineral and nutritive components of feeds. Expensive elements are included in modern scientifically formulated feeds, and careful, rational planning must precede actual production. Unfortunately, this has not been the case in numerous instances. Often, feed producers, lacking the premixes supplied by specialized plants, use faulty formulas and as a result fail to include essential elements. This often results through utilization of outdated handbooks. On the other hand,

1/2



USSR

KOSMACHEV, V. K., ZHIVOTNOVODSTVO No 6, Jun 76 pp 80-82

overuse of vitamins and minerals may be not only financially wasteful but also harmful to the animals. Careful analysis of formulas and present products will permit combining and economies of scale. Comprehensive investigations are required to develop recommendations for use of the best minerals, vitamins and antibiotics from the points of view of complementary utilization, synergism, assimilation and cost.

2/2

USSR

UDC 636.4.084.522

YAROV, I. I., professor, KALINNIKOVA, YE. T., senior scientific collaborator, ALEKSEYEV, K. A., aspirant, and ANDREYEV, S. A., engineer, Moscow Technological Institute of the Meat and Dairy Industry

FEEDING SWINE GRAINS WITH ADDED PROTEIN-VITAMIN SUPPLEMENTS, YEASTS AND PREMIXED CONCENTRATED LYSINE

Moscow ZHIVOTNOVODSTVO in Russian No 6, Jun 76 pp 64-65

[Abstract] In the experiment, 10-12 swine per group were fed in automated pens and their weight and food consumption measured in the periods up to 45 kg, from 45-75 kg, and 75 kg until the end of the feeding period. Protein-vitamin supplements, yeasts and concentrated lysin premixes were then included in the rations so that the amount of lysin was the same for all test animals. The basic feed was either a mixture of corn and barley, or (in one of the five tests) pure barley. The effectiveness of dl-methionine additives was tested in two of the experiments. Results indicated that addition of yeasts or

1/2

USSR

YAROV, I. I., KALINNIKOVA, YE. T., ALEKSEYEV, K. A., and ANDREYEV, S. A.,  
ZHIVOTNOVODSTVO No 6, Jun 76 pp 64-65

protein-vitamin supplement No 55-1 were more effective with barley and corn feeds than use of concentrated lysine or synthetic methionine. In slaughtered swine, the relation of fat to lean meat was better in those fed the supplements. The protein contained in the meat also was of higher quality in the animals fed supplemental vitamins and proteins. Tables 2.

2/2

USSR

UDC 636.085.535

KATSITADZE, O. V., Deputy Minister for Provisioning, Georgian SSR, candidate of technical sciences; GEORGOBIANI, R. SH., Director of the Georgian Branch of the All-Union Scientific Research Institute of Premixed Fodder Production, MOSKALENKO, A. M., Director of the Laboratory for Effective Production and Utilization of Premixed Fodders, candidate of agricultural sciences; and KATSITADZE, B. V., Director of the Technological Laboratory of Premixed Fodder Production

#### PRODUCTION OF FEED MIXES FROM CORN STALKS

Moscow ZHIVOTNOVODSTVO in Russian No 6, Jun 76 pp 54-55

[Abstract] Since the nutritional value of corn stalks is roughly equivalent to that of hay of average quality, the present study sought to determine feasibility of corn stalks for fodder when mixed with carbamide, molasses and byproducts from the Rustavi metallurgical plant in Georgia. The corn stalks were crushed and pulverized before treatment and processing with molasses, carbamide and water. Results indicated that only high quality corn stalks

1/2

USSR

KATSITADZE, O. V., GEORGOBIANI, R. SH., MOSKALENKO, A. M., KATSITADZE, B. V.,  
ZHIVOTNOVODSTVO No 6, Jun 76 pp 54-55

not infested with fungi or rots, and containing up to 16% moisture, could be used. Pulverized corn stalks proved to be an effective feed when used in combination with other local premixed feeds. Tables 1.

2/2

USSR

UDC 633.174

SITNIKOV, A. F., Director of the State and Collective Farm Association for  
Feeding Livestock in Rostov Oblast, "Severnoye," Rostov Oblast

SORGHUM, A HIGHLY EFFECTIVE FODDER CROP

Moscow ZHIVOTNOVODSTVO in Russian No 6, Jun 76 pp 53

[Abstract] To increase feed yields from lands in dry regions, expansion of sorghum planting is very desirable, since experience indicates that sorghum is resistant to drought. Its ability to continue growth from May to September permits processing as late as November, when other fodder crops have ceased growing. The "Severnoye" Association (Chertkovskiy Rayon, Rostov Oblast) conducted experiments on weight gain from sorghum and control feeds in 1975, using steers of 1.5 years of age weighing at the start 280-300 kg. Average daily weight gains in comparison to food units and man-days of input indicate successful results. Plantings of sorghum should therefore be increased and along with that, there should be increases in application of organic and mineral fertilizers.

1/1

USSR

UDC 636.085.6

SIDOROV, V. A., Director, Feed Technology Laboratory and candidate in biological sciences, VEL'CHO, S. F., Senior Scientific Worker, candidate of technical sciences, North Caucasus Scientific Research Institute for Animal Husbandry; and LOBUR', YU. M., Director of the Plant for Premixed and Granulated Feeds of the Collective Farm "Sovetskaya Rossiya," Pavlovsk Rayon [Krasnodar Kray]

A PLANT FOR PREPARING PREMIXED AND GRANULATED FODDERS IN THE COLLECTIVE FARM

Moscow ZHIVOTNOVODSTVO in Russian No 6 Jun 76 pp 51-53

[Abstract] To feed the large and diversified livestock at the "Sovetskaya Rossiya" collective farm, a modern production line was set up to process feeds using machinery of domestic production. It is capable of preparing powdered and granulated grasses and straws, crushing and preparing grains, and adding proper amounts of carbamides and minerals required by the individual livestock. It also initiates cooling and other preserving procedures. The production machinery is installed in a semi-underground building with efficient loading platforms for incoming agricultural raw materials and for finished products. It is largely automated, so that a basic crew of six is sufficient for most production. Initial operating efficiency indicates significant savings per unit of feed that will quickly recover the investment. Improvements indicated 1/2

USSR

SIDOROV, V. A., VEL'CHO, S. F., and LOBUR', YU. M., ZHIVOTNOVODSTVO No 6 Jun 76 pp 51-53

include stabilization of the carotin in grasses with antioxidants, and calcination or other treatment of cellulose, as well as stringent quality control. One diagram.

2/2

USSR

UDC 633.179

NAFTALIYEV, SH. P., candidate of agricultural sciences, Feed Production Section of the Dagestan Scientific Research Institute for Agriculture; and SAMEDOV, M. M., Chairman of the Sogratl' Collective Farm, Gunibskiy Rayon, Dagestan ASSR

AN EXPERIMENT IN RAISING SUDAN GRASS FOR GREEN FEED AND HAY

Moscow ZHIVOTNOVODSTVO in Russian No 6 Jun 76 pp 49-50

[Abstract] Sudan grass is highly productive in comparison to such feed crops as corn and sorghum, even in dry conditions, and therefore the reported experiments were performed to determine green foliage and dry hay production with two or three annual cuttings. The results indicated optimal seeding per hectare (45 kg), and desirable mixtures of Sudan grass with legumes in order to provide the best protein combinations in premixed feeds. Soy beans and annual Persian clover proved to be desirable additions to the Sudan grass crop. A major increase of plantings to Sudan grass was indicated in the Dagestan republic. Tables 3.

1/1

USSR

UDC 636.085.523.4

MATKEVICH, V. T., candidate of agricultural sciences, Kirovograd State Agricultural Experimental Station

THE EFFECTIVENESS OF PREPARING HAY FEED FROM SOY BEANS

Moscow ZHIVOTNOVODSTVO in Russian No 6 Jun 76 pp 47-48

[Abstract] There are more essential amino acids in the protein of soya than in peas or other legumes; at the same time, the yield and feed value of soya as foliage is close to the level of alfalfa, sainfoin and annual legume crops. Yet up to now the composition and quality of fodders prepared from soya foliage has been insufficient for animal feeding. The experiment reported weighed the effectiveness of various methods of producing feed from soya foliage as green feed, silage and hay feed, all produced at the bean-forming stage of the plants. Moisture content was measured at cutting and in the airdried product, and food units, protein and carotin were compared at the same stages of preparation. Results indicated that in the most diverse climatic conditions, soya could provide high protein and carotin yields; best results were obtained after drying to 50-55 percent of the initial moisture content. Savings of 50 rubles per hectare were realized. Tables 2.

1/1

USSR

UDC 636.085.55.002(470)

OGRYZKIN, G. S., Deputy Minister of Agriculture, RSFSR

THE DEVELOPMENT OF PREMIXED FODDERS IN THE COLLECTIVES AND STATE FARMS OF THE RSFSR

Moscow ZHIVOTNOVODSTVO in Russian No 6, Jun 76 pp 37-44

[Abstract] An additional 41 billion rubles will be spent on agricultural development in 1976-80 over that in the past five-year plan, much of it to assure sufficient premixed fodders for animal husbandry. Installations serving several collective farms offer superior prospects for efficient resource utilization through economies of scale; successful results in this direction have already been recorded in Tula Oblast. On the other hand, certain other areas of the Federation have made mistakes in processing and storing mixed fodders that have resulted in serious shortages. Industrial output of necessary machinery cannot equal demand in the immediate future, so that individual collectives will be required to find ways to satisfy part of their needs temporarily. Bone meal from butchering operations is one source of animal protein and calcium that should be exploited, along with pulverized

1/2

USSR

OGRYZKIN, G. S., ZHIVOTNOVODSTVO No 6, Jun 76 pp 37-44

herbiage. The latter is lagging far behind demands for it, in the RSFSR, and its production must be converted to an industrial model as a key goal of technical progress in fodder production. Synthetic nitrogen compounds offer important protein supplements for ruminants; they can provide 25-30 percent of needs in the form of carbamides, at much lower costs than those for protein feeds of animal and vegetable origins.

2/2

USSR

UDC 582.282.125.095:577.154.33

LOBANOK, A.G., ZINCHENKO, O.N., ROMANOV, S.L., SMETANIN, V.V., and  
BOGOMAZOVA, L.T., Institute of Microbiology, Academy of Sciences  
Byelorussian SSR

BIOGENESIS OF CELLULOLYTIC ENZYMES OF TRICHODERMA LIGNORUM ON MEDIA WITH  
AN "INDUCTOR"

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 4 Jul/Aug 76 signed to press  
25 Oct 75 pp 620-624

[Text-English language abstract supplied by authors] Identical distribution of  $C_2$ - and  $C_x$ -cellulase activities of enzyme complexes produced by *Trichoderma lignorum* on a medium with lactose, a soluble "inductor", and on a medium with cellulose was found by means of disc electrophoresis in polyacrylamide gel. The maximum rate of synthesis of cellulases on the medium with lactose was registered during the highest deceleration, and even complete cessation, of the fungal growth. During this phase, only one electrophoretically homogeneous cellulase component with  $R_f$  of 0.44

1/2

USSR

LOBANOK, A.G., ZINCHENKO, O.N., ROMANOV, S.L., SMETANIN, V.V., and  
BOGOMAZOVA, L.T., MIKROBIOLOGIYA Vol 45 No 4 Jul/Aug 76 pp 620-624

possessing all types of the cellulase activity is present in the cultural broth. In the course of growth of the fungus on cellulose after 48 hours, only one electrophoretically homogeneous component with  $R_f$  of 0.44 was found in the cultural broth when the rate of the substrate degradation was highest. The appearance of minor protein components with the activity of cellulase at later stages of cultivation after cessation of the fungal growth is presumed to be caused by modification of the main cellulase component with  $R_f$  of 0.44 by the growth medium. Figures 3; Table 1; References 15: 6 Russian, 9 Western.

2/2

USSR

UDC 582.282.23.095.15:547.96

KVASNIKOV, YE.I., ISAKOVA, D.M., BURAKOVA, A.A., SKOFENKO, A.A.,  
TODOSIYCHUK, S.R., and KACHAN, A.F., Institute of Microbiology and Virology,  
Academy of Sciences Ukrainian SSR

INFLUENCE OF TEMPERATURE ON SYNTHESIS OF PROTEIN AND INDIVIDUAL AMINOACIDS  
BY THERMOTOLERANT CANDIDA TROPICALIS YEASTS ON MEDIA WITH HYDROCARBONS

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 4 Jul/Aug 76 signed to press  
20 Jun 75 pp 636-639

[Text-English language abstract supplied by authors] Synthesis of protein  
and amino acids by the thermotolerant yeast *Candida tropicalis* K-41  
was studied at various temperatures of cultivation during growth on media  
with hydrocarbons in conditions of continuous cultivation. The content of  
protein in the cells decreased by 6% with an increase in growth temperature  
by 10°C (from 29 to 39°C) while excretion of free amino acids into the  
medium increased. The cultural broth of the cells grown at 39°C contained  
up to 8 amino acids, with alanine, aspartic acid, serine and glycine pre-  
vailing. The content of amino acids which were liberated into the medium

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USSR

KVASNIKOV, YE.I., ISAKOVA, D.M., BURAKOVA, A.A., SKOFENKO, A.A., TODOSIY-  
CHUK, S.R., and KACHAN, A.F., MIKROBIOLOGIYA Vol 45 No 4 Jul/Aug 76 pp 636-  
639

decreased in the intracellular pool. However, the total amount of free  
amino acids in the system "cell-medium" remained constant at various  
temperatures of cultivation. Synthesis of free amino acids does not  
presumably limit total synthesis of protein by the yeast. Figures 2;  
Tables 1; References 17: 16 Russian, 1 Western.

2/2



USSR

UDC 582.282.23.095

TARASOVA, N.V., IVANOVA, G.I., and GOLOLOBOV, A.D., All-Union Scientific Research Institute of Biosynthesis of Protein Substances

PARTICIPATION OF UBIQUINONE-9 IN THE ELECTRON TRANSPORT CHAIN IN CANDIDA GUILLIERMONDII

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 3 May/Jun 76 signed to press pp 400-405

[Text-English language abstract supplied by authors] The activity of ubiquinone-dependent enzyme systems was studied in mitochondrial fractions of the yeast *Candida guilliermondii* cultivated on a medium containing carbohydrates or hydrocarbons as a source of carbon. The activity of NADH<sub>2</sub>-oxidase and succinate-CoQ-reductase was higher in systems with mitochondrial fractions from cells grown on the medium with n-paraffins than in mitochondrial fractions from the cells cultivated on the medium with glucose. About 30% of intracellular ubiquinone is located in the mitochondrial fraction of hydrocarbon oxidizing yeast cells; however, the

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USSR

TARASOVA, N.V., IVANOVA, G.I., and GOLOLOBOV, A.D., MIKROBIOLOGIYA Vol 45 No 3 May/Jun pp 400-405

activity of enzymes was stimulated upon introduction of exogenous ubiquinones into the systems. Therefore, exogenous ubiquinones may be involved in the electron transport chain during oxidation of reduced substrates. Both ubiquinone-dependent enzyme systems are stable to storage. Figures 3; Tables 3; References 20: 4 Russian, 16 Western.

2/2

USSR

UDC 576.8.095.3:547.963.32

BELYAYEVA, M. I., KAPRANOVA, M. N., VITOL, M. YA., GOLUBENKO, I. A.,  
and LESHCHINSKAYA, I. B., Kazan State University

UTILIZATION OF NUCLEIC ACIDS AS THE BASIC SOURCE OF NUTRITION FOR BACTERIA

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 3 May/Jun, signed to press  
22 Jul 75 pp 420-424

(Text-English language abstract supplied by authors) Secretion of DNases and RNases, respectively, was found in saprophyte bacteria isolated from nature and growing on media containing DNA and RNA. *Serratia marcescens* and *Bacillus subtilis* with a high nuclease activity can assimilate RNA and DNA as the main source of nutrition. *Ser. marcescens* with a nuclease which attacks both DNA and RNA can grow equally well on these acids. *Bac. subtilis* has a higher activity of RNase and grows better on RNA. Figures 5; Table 1; References 5: 4 Russian, 1 Western

1/1

USSR

UDC 576.8:550.72:546.59

KOROBUSHKINA, YE. D., MINEYEV, G. G., and PRADED, G. P., Irkutsk State Scientific Research Institute of Rare and Non-Ferrous Metals "Irgiredmet"

MECHANISM OF MICROBIOLOGICAL DISSOLUTION OF GOLD

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 3 May/Jun 76, signed to press  
15 Jun 75 pp 535-538

(Text-English language abstract supplied by authors) The paper presents new data concerning the mechanism of microbiological dissolution of gold. The sign of charges on gold-protein complexes was determined by paper electrophoresis. Anion complexes were found to prevail. Free amino groups participate in formation of complexes between gold and amino acids in alkaline medium, and functional groups of amino acid residues in polypeptide groups are involved in formation of complexes with proteins. Formation of complexes between gold and these compounds seems to be due to the Au-N bond. Figure 1; References 10 (Russian)

1/1

USSR

UDC 576.852.184.094

ARISTARKHOVA, V.I., Institute of Microbiology, Academy of Sciences USSR

FINE STRUCTURE OF NOCARDIA CORALLINA WHICH OXIDIZE PHENOL

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 3 May/Jun 76 signed to press  
18 Sep 75 pp 507-511

[Text-English language abstract supplied by author] Intracellular structures were detected in *Nocardia corallina*, strain 4, on a medium containing phenol as a sole source of carbon but not on a conventional growth medium (MPA). The structures are light vacuoles containing granular and fibrillar electron-dense substance. The structures specific of this medium may be regions of phenol oxidation. Figures 2; References 13: 1 Russian, 12 Western.

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USSR

UDC 576.8.095.323.5

SHISHKINA, V.N., YURCHENKO, V.V., ROMANOVSKAYA, V.A., MALASHENKO, YU.P., and TROTSSENKO, YU.A., Institute of Biochemistry and Physiology of Microorganisms, Academy of Sciences USSR; Institute of Microbiology and Virology, Academy of Sciences Ukrainian SSR

ALTERNATIVE NATURE OF PATHWAYS OF METHANE ASSIMILATION IN OBLIGATE METHYLOTROPHS

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 3 May/Jun 76 signed to press  
7 May 75 pp 417-419

[Text-English language abstract supplied by authors] The activity of key enzymes involved in the primary pathways of methane assimilation and enzymes of the citrate cycle was determined in various obligate methylo-trophs: mesophilic, thermotolerant, and thermophilic. The bacteria are characterized by a membrane ultrastructure of the I type, high activity of hexosephosphate synthase, NAD- and NADP-specific isocitrate dehydrogenase, and the absence of  $\alpha$ -ketoglutarate dehydrogenase. The bacteria

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USSR

SHISHKINA, V.N., YURCHENKO, V.V., ROMANOVSKAYA, V.A., MALASHENKO, YU.P., and TROTSSENKO, YU.A., MIDROBIOLOGIYA Vol 45 No 3 May/Jun 76 pp 417-419

also displayed the activity of key enzymes of the serine cycle, hydroxypyruvate reductase, and serineglyoxylate aminotransferase. Therefore, both the ribulose monophosphate and serine pathways are involved in methane assimilation, and division of methanotrophs into two groups, according to their metabolism, is conditional. Table 1; References 20: 2 Russian, 18 Western.

2/2

USSR

UDC 576.343

BAKALKIN, G. YA., KAL'NOV, S. L., ZUBATOV, A. S., and LUZINKOV, V. N., Department of Biokinetics of the Interfaculty Laboratory of Bioorganic Chemistry of the Moscow State University imeni M. V. Lomonosov

DEGRADATION OF INTRACELLULAR PROTEINS AT DIFFERENT PHASES OF GROWTH OF SACCHAROMYCES CEREVISIAE YEAST

Moscow BIOKHIMIYA in Russian Vol 41 No 6, Jun 76 signed to press 1 Dec 75 pp 1121-1126

[Text-English language abstract supplied by authors] The rate of degradation of intracellular proteins at different growth stages of *Saccharomyces cerevisiae* yeast was determined. It has been demonstrated that the rate of degradation of intracellular proteins increases 2-3 fold at the late exponential phase. The increase was accompanied by corresponding changes in the activities of yeast proteinases A and B. In the presence of specific yeast proteinase inhibitors (pepstatin and phenylmethylsulfonyl fluoride) the rate of protein degradation in vivo decreased. The intermediate products of cell protein degradation have been found. These trichloroacetic acid-insoluble products could be extracted by various solvent systems. Their subsequent breakdown was suppressed by specific proteinase inhibitors. Figures 4; tables 2; references 20: 2 Russian, 18 Western.

1/1

USSR

TONKOPY, V. D., PROZOROVSKIY, V. B., and SUSLOVA, I. M., Military Medical Academy imeni S. M. Kerov, Leningrad

INTERACTION OF REVERSIBLE INHIBITORS WITH CATALYTIC CENTERS AND ALLOSTERIC SITES OF CHOLINESTERASES

Moscow BYULLETIN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in English Vol 82 No 8 Aug 76 p 950

(Text-English language abstract supplied by author) The kinetics of inhibition of human red blood cell cholinesterase with galanthamine, tacrine and oxazyl (ambenonium) and the effect of these drugs on chick, mouse, cat and rat blood plasma enzyme activity was studied. Galanthamine proved to bind with acetylcholinesterase in the anionic areas of the catalytic centers, oxazyl interacted in the area of the allosteric anionic site, and tacrine interacted with the hydrophobic areas of the enzyme. References 7 (Russian)

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## Biophysics

USSR

UDC 616.981.57-092.9-07:616.832-091.81-07

MIKHAYLOV, V. V., BERSUDSKIY, S. O., and MIKHAYLOV, V. Vas., Department of Pathological Physiology imeni A. A. Bogomolets, Saratov Medical Institute

### SPECIFICITY OF THE PATHOGENIC ACTION OF GAS GANGRENE TOXINS ON SPINAL ALPHA MOTONEURONS IN CATS

Moscow PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTALNAYA TERAPIYA in Russian No 3 May/Jun 76 signed to press 20 Mar 75 pp 35-41

(Text-English language abstract supplied by authors) Electrical activity of intermediate and motoneurons of cat spinal sacrolumbar segments was studied with intracellular micropipettes. Some of the alpha-motoneuron gas gangrene induced by injection of Cl. oedamatiens and Cl. septicum toxin into the muscle of the shin lost the property of generating the action potential in response to orthodromic stimulation despite the appearance of the EPSP equal in value to that of controls. During aseptic inflammation or traumatic destruction of the soft tissues at the same site as the focus of gas gangrene, disturbances of the generation of the action potentials by the alpha-motoneurons were different. Tables 3; References 29: 24 Russian, 5 Western.

1/1

USSR

UDC 615.831.4.015.3.001.5(091)

MANIKOV, M. YE., Moscow

### HISTORY OF THE DEVELOPMENT OF THE DOSE MEASUREMENT METHOD FOR UV-RADIATION USED IN PRACTICAL WORK

Moscow VOPROSY KURORTOLOGII, FIZIOTERAPII I LECHEBNOY FIZICHESKOY KUL'TURY (Problems of Health Resort Science, Physiotherapy and Therapeutic Physical Education) in Russian No 4, Jul/Aug 76 signed to press 12 Dec 75 pp 83-84

[Abstract] In 1911 Bach developed a UV irradiator, proposing to measure the exposure dose by the distance from the source and duration of the exposure. In 1923 I. F. Gorbachev proposed to determine the dose of radiation by individual skin sensitivity of the patient. Independently, Dahlfeld came out with a similar detailed method which he published, while Gorbachev did not publish his approach to this problem. The author stresses the fact that both scientists should have been given credit for discovery of this method, or at the very worst, the instrument should be called "biodosimeter" without any name reference. No tables or figures; references 11: all Russian.

1/1

USSR

UDC 615.846.015.4:612.115

RUSYAYEV, V. F., and MULYNDINA, G. I., Chair of Physics, Chita Medical Institute

EFFECT OF UHF ELECTRIC FIELD ON THE BLOOD COAGULATION SYSTEM IN ANIMALS

Moscow VOPROSY KURORTOLOGII, FIZIOTERAPII I LECHEBNOY FIZICHESKOY KUL'TURY (Problems of Health Resort Science, Physiotherapy and Therapeutic Physical Education) in Russian No 4, Jul/Aug 76 signed to press 2 Jan 74 pp 76-79

[Abstract] Exposure to a UHF electric field leads to definite changes in the blood coagulation system expressed by elevated thromboplastic activity of the plasma. Increased antiheparin activity also indicates a shift towards hypercoagulation. In case of tissue homogenates, exposure to UHF electric field results in lower coagulation activity in the aorta and heart, increased recalcification time and lower antiheparin activity in the myocardium. In other words, UHF electric field causes hypercoagulemia with a depression of thromboplastic and fibrinolytic ability of tissue extracts. Tables 2; figure 1; references 8: 4 Russian, 4 Western.

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## Entomology

USSR/BULGARIA

UDC 765.851.42.095.38:576.895.421

KOVACHEV, S. G., Zoological Institute of the Bulgarian Academy of Sciences, Sofia

A CASE OF MASS ATTACK OF BOOPHTHORA ERYTROCEPHALA DE GEER ON PEOPLE IN BULGARIA

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian  
Vol 45 No 4 Jul/Aug 76 signed to press 17 Dec 76 pp 484-485

(Abstract) *B. erythrocephala* is known to have attacked people (Germany, Neustadt bezirk-1921, Denmark-1924, Poland-1929, Hungary-1964, 1971, Yugoslavia-1967, 1972 and the USSR-1956). It was first found in the Sofia region in 1973 and later in other parts of the country, and was few in numbers and harmless. However, in 1973 villages in the Sofia oblast, Bezden, Opitsvet, Petrich, Bogevtsi, and Obedineniye experienced a massive multiplication of *B. erythrocephala* and extremely aggressive attacks on people--resulting in loss of ability to work. The local river Blato was contaminated with petroleum products which affected food sources. Favorable temperature in July of 1973 accelerated development of the erythroencephalia; in the absence of nutrients in the river it began actively to suck blood as its food source. References 11: 1 Russian, 1 Hungarian, 9 Western

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USSR

UDC 615.285.7.015.154

KOSHKINA, I. V., and KHARITONOVA, S. I., Institute of Medical Parasitology and Tropical Medicine imeni Ye. I. Martsinovskiy, Ministry of Health USSR

INFLUENCE OF FIXATORS AND POLYMERS ON PERSISTANCE OF REPELLENTS ON TISSUE

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian  
No 4, 1976 signed to press 10 Dec 74 pp 446-449

(Text-English language abstract supplied by authors) The influence of a number of polymers (methylcellulose, sodium carboxymethylcellulose, ethylcellulose, polyvinyl pyrrolidone mol. w. 42,000, polyvinyl alcohol, Shostakovsky's balsam) and fixators of perfume industry (benzylbenzoate, benzylsallylate, diethylphthalate, phenylethylbenzoate, ethyl cinnamate, Tolu and Peru balsams, benzoic resin, styrax) on the duration of the repelling effect of alcohol solutions of DETA-40%, dimethylphthalate-50%, P-2-30% and P-228-10% was studied. Only synthetic fixators (benzylbenzoate, prolongation of repellent effect of tissues against Aedels vexans mosquitoes. As a rule, when used as 20-30% preparations, they prolonged the repelling effect of the above repellents by 1.6-2.7-folds compared to the reference preparation, an alcohol solution of the appropriate repellent. Table 1; References 15: 14 Russian, 1 Western  
1/1

USSR

UDC 595.787:591.511:591.16

MINYAYLO, V. A., KOVALEV, B. G., KIROV, YE. I., and BAKHVALOV, S. A., All-Union Scientific Research Institute of Biological Plant Protective Methods (Kishinev), Institute of Chemical Kinetics and Combustion, Siberian Branch of the Academy of Sciences USSR (Novosibirsk) and Biological Institute of the Siberian Department, Academy of Sciences USSR (Novosibirsk)

COMPARISON OF THE ATTRACTIVE POWER OF DISPARLUR, ITS TRANS-ISOMER AND PORTHETRIA MONACHA FEMALES FOR THE MALES OF THE LATTER SPECIES

Moscow ZOOLOGICHESKIY ZHURNAL (Zoological Journal) in Russian Vol 40 No 9, Sep 76 pp 1410-1411

[Abstract] The pheromone of porthetria dispar females--disparlur (cis-7,8-epoxy-2-methyloctadecane)--proved to be an effective sex attractant for porthetria monacha males. At doses of 1-10 ug disparlur appeared to be equivalent to one female in its sex attracting power. Trans-disparlur was less effective by one order of magnitude than its cis-isomer. Table 1; references 6: 2 Russian, 4 Western.  
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## Environmental and Ecological Problems

USSR

KERKIS, YU. YA., professor, Novosibirsk

### GENETIC CONSEQUENCES OF ENVIRONMENTAL POLLUTION

Moscow PRIRODA in Russian No 9, Sep 76 pp 32-33

[Abstract] A survey of reports given at two conferences: "Humanity and the Biosphere" Tashkent 3-4 April, held by the genetics section of the Interdepartmental Council of the State Committee on Science and Technology of the USSR Council of Ministers; and the third meeting of the Soviet-American Symposium on Theoretical and Practical Approaches to Mutagenesis and Carcinogenesis in the Environment held at Dushanbe 6-8 April 76. As Tashkent is a cotton growing center, many of the reports there focused on the effects of pesticides and desiccating agents. Cotton is damaged by many pests and diseases. The chemicals used to fight these pests have been found in the tissues of goats and rabbits in the high mountain areas of this region. Radiation and chemical mutagens have been used to produce cotton which naturally loses its leaves at the end of the growth period. Biological methods are being used to fight the boll worm (*Heliothis armiger*) on some farms. This has reduced pest control costs and raised yields. The problem of vinyl chloride in the United States was the subject of an American researcher's

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USSR

KERKIS, YU. YA., PRIRODA No 9, Sep 76 pp 32-33

report. There are many difficulties in establishing maximum permissible concentrations of various substances, and determining the interaction between various potentially carcinogenic substances. Many test systems were described. Some register frequency of breaks in DNA molecules. A special instrument which gives information on damage to human chromosomes was described. It uses fluorometric methods. The report of the American scientist S. Wolfe on his method for testing mutagenic substances evoked active discussion at the symposium. The Soviet American Symposium stressed the usefulness of contacts in this area and it was agreed that research should be carried out on two test systems: one to test mutagenic effects on microorganisms and the other to study these effects in human cells. No references.

2/2

USSR

UDC 576.895.42:616.981.459

KONDRATENKO, V.F., Rostov-on-Don Scientific Research Institute of Epidemiology, Microbiology, and Hygiene.

THE ROLE OF IXODID TICKS IN TRANSMISSION AND MAINTENANCE OF THE INFECTIOUS AGENT OF CRIMEAN HEMORRHAGIC FEVER IN FOCI OF INFECTION

Leningrad PARAZITOLOGIYA in Russia Vol 10 No 4 Jul/Aug 76 pp 297-302

[Text-English language abstract supplied by authors] Experimental infection of *Hyalomma plumbeum* Panz., *Rhipicephalus rossicus* Jak. et K. Jak. and *Dermacentor marginatus* Sulz. with the virus of the Crimean hemorrhagic fever has shown that preimaginal phases of the above ticks easily receive the infection agent from the infected donor, preserve it for a long time, transmit it, through a bite during feeding, to susceptible animals; during metamorphosis they transmit this agent to the subsequent developmental phases as well as to the progeny of infected individuals from one generation to another. Tables 3; References 10 (Russian).

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USSR

UDC 576.895.42:591.16(470.23)

ZOLOTOV, P. YE., and BUKER, V. P., Leningrad Oblast Sanepid Station

LIFE CYCLE OF IXODES LIVIDUS KOCH FROM THE LENINGRAD OBLAST

Leningrad PARAZITOLOGIYA in Russian Vol 10 No 4 Jul/Aug 76 pp 376-378

(Text-English language abstract supplied by authors) Under conditions prevailing in the Leningrad oblast *I. lividus* has, in general, a one year life cycle. The winter is passed in burrows of swallows. Having engorged on swallows, overwintering larvae change in burrows and in 24-26 days moult for nymphs. In a fortnight after 4-5 day feeding on nestlings the latter transform into imagos. After passing the stages of the postmoulting development (3-4 days), feeding on nestlings (5-7 days), rest (7-8 days) and oviposition (14-18 days) the females die. Larvae of a new generation appear in August-September. However, 2.8 to 6.5% of individuals in a population, due to late feeding of larvae or mortality of hosts, stop in their development at phases of imago and nymph and hibernate together with larvae. In an overwintering population they accounted for 3.4-5.0%. Tables, 2; References 5 (Russian)

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USSR

UDC 576.851.45.095.38:576.851.136

KHRUSTSELEVSKAYA, N.M., BIBIKOVA, V.A., and SERZHANOV, O.S., Middle Asian Scientific Research Plague Control Institute, Alma-Ata; Institute of Medical Parasitology and Tropical Medicine imeni Ye.I. Martšinovskiy, Ministry of Health USSR, Moscow

RELATIONSHIP OF THE PLAGUE BACILLUS AND LISTERIA UNDER VARIOUS ENVIRONMENTAL CONDITIONS

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian Vol 45 no 4 Jul/Aug 76 signed to press 15 Feb 74 pp 460-464

[Text-English language abstract supplied by authors] Simultaneous or successive infection of fleas with the causative agents of plague and listeriosis has been shown not to prevent: (1) infection of fleas with both agents, (2) reproduction and persistence of both agents in insects, (3) formation of specific plague proventriculus block in fleas, (4) transmission to normal mice of the causative agent of plague by flea bite and in some cases of the causative agent of listeriosis too. In all cases of mixed infection the number of fleas with proventriculus block was 1.5-2 times lower than when the insects were infected with *P. pestis* alone.

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USSR

KHRUSTSELEVSKAYA, N.M., BIBIKOVA, V.A., MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI Vol 45 No 4 Jul/Aug 76 pp 460-464

Inoculation of mice with absolutely fatal doses of *P. pestis* together with listeria usually led to the death of the animals due to mixed infection or listeriosis. Some animals survived. Pre-inoculation of mice with listeria reduced their susceptibility to plague. It may be assumed that transmission by blocked fleas of single and, simultaneously, two infectious agents helps spread of mixed infections in a focus, leads to an increase in the number of carriers resistant to plague which, in its turn, may affect the force of infection in combined natural foci of infections. Tables 2; References 23 (Russian).

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USSR

UDC 576.895.421.095.382:576.858.25(575.4)

I'VOV, E. K., KURBANOV, M. M., NERONOV, V. M., GROMASHEVSKIY, V. L., SKVORTSOVA, T. M., GOFMAN, YU. P., KLIMENKO, S. M., BERDYEV, A., KISELEVA, N. V., VATOLIN, V. P., and ARISTOVA, V. A., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

ISOLATION OF WAD-MEDANI ARBOVIRUS FROM HYALOMMA ASIATICUM SCH. ET SCHL. 1929 IN THE TURKMEN SSR

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian No 4, 1976 signed to press 4 Aug 75 pp 452-454

(Text-English language abstract supplied by authors) In studies on natural foci of arboviruses in the zone of the Kara-Kum Canal, Turkmen SSR, in 1973, five identical strains were isolated from *Hyalomma asiaticum* Sch. et Schl., 1929, ticks collected from sheep and camels. Studies on the antigenic and morphological properties of the isolates showed their appurtenance to Wad Medani virus from the Kemerovo antigenic group (obisviruses). This is the first isolation of Wad Medani virus in the USSR. Tables 2; References 8: 2 Russian, 6 Western

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USSR

UDC 616.936-022.375(571.53)

USOL'TSEVA, Z. N., ZHITNITSKAYA, E. A., and CHISTOFOROVA, G. A., Irkutsk Oblast and City Sanapid Stations

IMPORT OF MALARIA INTO IRKUTSK OBLAST

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian No 4, 1976 signed to press 23 Apr 76 pp 429-432

(Text-English language abstract supplied by authors) From 1961 to 1975 in the Irkutsk oblast 403 cases of imported malaria were registered, including 19 in Soviet citizens and 384 in foreign students arriving for study in the USSR. Soviet citizens contracted the infection in countries of tropical Africa, South East Asia and Middle East (17 cases) as well as in southern republics of the USSR (2 cases). In 97% of the cases the causative agent was *P. vivax*. Soviet citizens showed acute manifestation of malaria, but foreign students were asymptomatic carriers of plasmodia. In the former, malaria was diagnosed when they applied for medical help because of the fever, and, in the latter, during special examinations upon their arrival in Irkutsk. Acute manifestations of malaria caused by *P. vivax* were observed maximally 32 months after departure from the tropics and in 1 of the patients with tropical malaria at 5 months after departure from the focus. Soviet citizens infected with malaria may present a certain epidemiological hazard as sources for infection of mosquitoes. Tables 2; References 2 (Russian)

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USSR

UDC 614.449.57:615.285.7

PRIDANTSEVA, YE. A., and VOLKOVA, T. V., Institute of Medical Parasitology and Tropical Medicine imeni Ye. I. Martsinovskiy, Ministry of Health USSR, Moscow

TRIALS OF ALTOZID SR-10 DRUG WITH JUVENILE ACTION AGAINST CULEX PIPIENS  
L. MOSQUITOES

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian  
No 4, 1976 signed to press 11 Jul 74 pp 438-442

(Text-English language abstract supplied by authors) Preliminary field trials of Altozid SR-10, a drug with juvenile activity against Culex pipiens pipiens mosquitoes were carried out in August-September, 1973, in the vicinities of Moscow. Two water bodies with an area of about 60 sq. m. were treated at a ratio of 120 g per hectare of water surface. In these water bodies, metamorphosis of mosquitoes was blocked effectively, particularly during the first week after treatment (92-100% death). The number of emerging imago in treated water bodies was reduced markedly in comparison with the control. In laboratory trials on Aedes aegypti larvae at the end of the IV stage with a 24-hour exposure the value LC-95 was 0.013 mg/l. Altozid SR-10 drug demonstrated a high juvenile activity in mosquitoes, which makes it a promising drug for mosquito control. Tables 3; References 7: 2 Russian, 5 Western  
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USSR

UDC 616.936-084.4(477.64)

DUKA, T. V., and BELOZERSKAYA, N. I., Zaporozhe Oblast Sanepid Station

MALARIA PROPHYLAXIS IN ZAPOROTZHE OBLAST

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian  
No 4, 1976 signed to press 17 Feb 75 pp 482-484

(Text-English language abstract supplied by authors) Malaria prophylaxis is performed regularly in Zaporozhye oblast. In 1970-1974, examinations for malaria among 70,934 persons revealed 9 cases of imported malaria: 7 among persons arriving from tropical countries and 2 from Azerbaijan. No cases of malaria were found among patients with febrile diseases of unknown etiology. Therefore their examinations for malaria were considered inexpedient. When people returning from tropical countries apply for medical help their blood must be examined mandatorily. Observations of the vector are under way, and measures for reduction of the area of anophelogenic water bodies are carried out. No references.

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USSR

UDC 616.993.162-022.39-036.7

SHUYKINA, E. YE., and KHUSEYINOVA, KH. KH., Institute of Medical Parasitology and Tropical Medicine imeni YE.I. Martsinovskiy, Ministry of Health USSR, Moscow

CLINICAL MANIFESTATIONS OF ZOONOTIC CUTANEOUS LEISHMANIASIS IN VARIOUS FOCI OF TURKMEN SSR. COMMUNICATION 1. CHARACTERISTICS OF THE PROCESS IN THE ACUTE STAGE OF THE DISEASE

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian Vol 45 No 4 Jul/Aug 76 signed to press 16 Jan 76 pp 408-414

[Text-English language abstract supplied by authors] A scheme for description of lesions in cutaneous leishmaniasis has been suggested which permits recording individual clinical manifestations of the acute stage of zoonotic cutaneous leishmaniasis (ZCL) in patients. A statistical analysis of the material collected according to this scheme (altogether 674 persons were examined) showed that in Turkmenia the clinical process had no definite differences in microsymptoms. A typical ulcer in ZCL is described. The observed differences were in the time course of the process, namely more active destruction early in the infection in patients in the Kerkin and Farab districts and less active in the Tedzhen district and in the western

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USSR

SHUYKINA, E. YE., and KHUSEYINOVA, KH. KH., MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI Vol 45 No 4 Jul/Aug 76 pp 408-414

part of the republic. Early in the infection in patients of the former two districts this was manifested in predominance of open ulcers with abundant or moderate secretion, predominantly purulent superimpositions, later start of epithelization, and greater size of the ulcer. The accrued materials suggested the existence of two forms of ZCL in Turkmenia. Eight out of 674 patients examined had an atypical course of ZCL. Two cases of the atypical disease are described. The causes of the observed clinical differences in ZCL in different foci of Turkmenia are discussed. Figures 2; Tables 3; References 25:22 Russian, 3 Western.

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## Food Supply

USSR

NIKITENKO, N., and SOROKO, YA.

### BLUE PASTURES OF THE PLANET

Moscow NAUKA I ZHIZN' (Science and Life) in Russian No 8, Aug 76 pp 68-73

[Abstract] The Pacific Ocean plays an important role in the life processes of our planet. It is an almost unexhaustible source of food and energy certainly to be tapped before the end of this century. Currently only 1% of the food comes from the ocean; this nevertheless represents 13-15% of all the protein consumed annually. The sea harvest comes only from its upper layers with current methodology. Much more of animal and plant wealth is available at greater depths, as yet untouched. A note of caution is inserted concerning overexploitation of certain areas; area rotation for fishing is recommended to prevent depletion of the stock. Sonar equipped trawling nets, acoustic attachments and channeling devices--these are the new modifications being introduced in modern fishing in order to maximize the catch with minimal destruction of fish balance. Photographs 3; no tables or references.

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USSR

BELYAYEV, M., LERINA, I., ZAGOSKINA, L. and SIMOVYAN, S.

### DISHES FROM MAKRURUS

Moscow OBNCHESTVENNOYE PITANIYE (Public Feeding) in Russian No 12, Dec 75 pp 39-40

[Abstract] In recent years the consumption of sea and ocean fish increased tremendously. Fish meat contains many valuable proteins; in some cases it surpasses meat from warm blooded animals. Several new recipes are reported using makrurus, such as makrurus in gelatin, makrurus baked with garlic as well as several cold dishes prepared from this fish. Experiments with UHF ovens showed that they are quite suitable for the preparation of this food, in some cases even exceeding the effectiveness of traditional ovens. No tables, figures or references.

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USSR

MAGIDOV, YA., Culinary Technological Laboratory "Moreprodukty" (Sea Products),  
Scientific Research Institute of Public Feeding

"OKEAN" (OCEAN) PASTE

Moscow OBSHCHESTVENNOYE PITANIYE (Public Feeding) in Russian No 12, Dec 75  
pp 37-38

[Abstract] Handling of the paste "Okean" and several recipes are reported. The defrosted paste should be used immediately; in cases of necessity it can be stored for up to 6 hrs at 4-8°C. When cold dishes are to be prepared from it, the paste should be pasteurized prior to its use by heating it at 85-90°C in water for 10 minutes. The paste should never be refrozen. Recipes are given for shrimp spread, shrimp spread with molten cheese, sandwiches, potato salad and soup-puree. No references, figures or tables.

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USSR

ZHUKOV-VEREZHNIKOV, N.N., ANISIMOV, P.I., GONCHAROVA, N.S., BOCHKO, G.M., KARASEVA, Z.N., SHANINA, L.N., and FOMIN, S.N., Plague Research Institute "Mikrob", Ministry of Health USSR; Research Laboratory of Experimental Immunobiology, Academy of Medical Sciences USSR, Moscow.

STUDY OF HETEROGENOUS ANTIGENS IN V. CHOLERA VACCINE PREPARATIONS

Moscow BYULLETIN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in English Vol 82 No 8 Aug 76 p 962

[Text-English language abstract supplied by authors] There proved to be a serological similarity between the antigens of the human small intestine, the stomach and the liver, and the antigens of various cholera vibrio fractions. No antigenic similarity was revealed in examination of the heart and kidney. Heterogenous antigen was found not only in the somatic V. cholerae antigen, strain 569 (B), but also in the cholero-gen-toxoid obtained from it. At present it is the most widespread prophylactic preparation. Figures 2; References 3 (Russia).

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USSR

UDC 616.127-005.8-07:616.155.32-074

VOROB'YEV, A. A., AFANAS'YEV, S. S., KANTIMULINA, R. K., CHIRKIN, YU. D., SHEPELEV, A. A., and GORDEN, I. A.

CLINICAL SIGNIFICANCE OF ALTERATION OF LEUKOCYTES IN MYOCARDIAL INFARCTION

Moscow KLINICHESKAYA MEDITSINA in Russian No 8, 1976 signed to press 6 Mar 76 pp 77-82

[Abstract] White blood cells from patients with myocardial infarction mixed with allergens (salt extracts) from an intact or necrotic part of the heart were destroyed in greater numbers than in the control (blood mixed with physiologic saline), an indication of the presence of autoantibodies. Regardless of the extent of the infarction or severity of the course, leukocytolysis was invariably more pronounced than in the control. This reaction can be used to determine whether an infarction has or has not occurred during an attack of angina pectoris. Figure 1; table 1; references 14: 12 Russian, 2 Western.

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## Inventions and Discoveries

USSR

MAKSIMOV, YE.

THUS IS CREATIVE MATURITY BORN (AT THE VI CENTRAL EXHIBITION OF THE SCIENTIFIC CREATIVITY OF YOUTH, 1976)

Moscow VESTNIK VYSSHEY SHKOLY in Russian No 8, Aug 76 pp 57-61

[Abstract] Several of the exhibits of students at the VI Central Exhibition of the Scientific Creativity of Youth, 1976, are discussed. Research and training displays included a mobile trainer for collecting soil samples along a route, a computer complex used to determine human visual-motor and auditory-vocal responses, a computerized planetarium, a record-holding electric racing car, a cybernometer for studying group rhythmic behavior and degree of psychological compatability, a device for investigating heat transfer, and a magnetic tape system for learning English. Among the economic and industrial demonstrations were an object classifier, a programmed modeling device for determining interference and screw cutter profile, a model of a two-story automobile transport railroad car which uses braces and a closed beam system to transfer upper deck load to the running section without loading the lower deck, a cryolytic

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USSR

MAKSIMOV, YE., VESTNIK VYSSHEY SHKOLY No 8, Aug 76 pp 57-61

zeolite-block purifier for argon and magnetomodulating measuring clips for contactless measurement of large constant currents. An electronic-digital linear displacement indicator for the measurement of object dimensions, a contactless rolling force and stress meter, a device to measure noise coefficients in linear-integral arrangements, a recording pressure meter, a model of a machine for cutting, fagoting and transporting logs using the energy of the falling wood, artificial shoe leather on a thin knitted elastic base, a complex device to investigate the process of electrical pore formation in artificial leather were also displayed. Agricultural exhibits included a model of a mechanized stand for vegetation experiments, soil fortifier, an improved tree planting machine and an aggregate which automatically prepares the soil and plants the tree. In the area of medical instrumentation a self-contained cryosurgical applicator, a miniature cardiac alarm, a portable, multichannel bioelectric stimulator, a portable digital pulse control indicator, an asynchronous, semiautomatic cardiobiostimulator, an inexpensive hearing aid and a miniature magnetic cassette electrocardiogram recorder were presented. Figures 5.

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USSR

UDC 599:524.1:591.17

MORDVINOV, YU. YE., Institute of Biology of the Southern Seas, Academy of Sciences Ukrainian SSR (Sevastopol')

WATER LOCOMOTION AND THE INDICES OF PROPELLING SYSTEMS EFFECTIVENESS FOR SOME AQUATIC MAMMALS

Moscow ZOOLOGICHESKIY ZHURNAL (Zoological Journal) in Russian Vol 40, No 9, Sep 76 pp 1375-1382

[Abstract] Using a special cinematographic technique and visual observation the water, the locomotion methods of *castor fiber*, *ondatra zibethica*, *myocastor coypus* and *mustela lutreola* have been documented. The swimming rates, working frequency and effectiveness of their propelling systems have been established. In approximately equal speed of swimming, the work frequency of the locomotive organs increases from *castor fiber* to *mustela lutreola* in the series listed above. As far as the effectiveness of propelling system is concerned, the most effective is that of *pusa caspica*, followed by *callorhinus ursinus*, *castor fiber*, *myocastor coypus*, *ondatra zibethica* and *mustela lutreola*. Figure 1; tables 2; references 24: 19 Russian, 5 Western.

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HUNGARY/BULGARIA/ROMANIA

BODON, L., Veterinary Medical Research Institute, Hungarian Academy of Sciences

OCCURENCE OF CONTAMINATING VIRUSES IN VARIOUS SWINE FEVER VIRUS STRAINS

Budapest ACTA VETERINARIA in English Vol 25, No 4 76 signed to press 26 Oct 73 pp 291-296

[Text-English language abstract supplied by author] The swine fever (SF) virus strain PAV-1, characterized in the United States as cytopathic, as well as five other SF virus strains failed to produce the cytopathic effect in our hands. The five strains had been submitted for examination from Bulgaria and Romania. The changes appearing in PK-15 permanent pig kidney epithelial cell cultures infected with the strains were not characteristic of any known group of viruses and similar changes also appeared in control cultures not infected with virus. This and the type of changes suggest that these were due to ageing or spontaneous degeneration of the cells rather than to SF virus. Table 1; References 23.

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USSR

UDC 576.8.093.33

SIVERS, V.S., and SPRAVTSEV, N.KH., Ukrainian Scientific Research Institute of Agricultural Microbiology

NUTRIENT MEDIUM FOR CULTIVATING LIGNIN-DESTROYING BACTERIA

Kiev MIKROBIOLOGICHNIY ZHURNAL in Ukrainian Vol 38 No 4 76 signed to press 15 Oct 75 pp 511-513

[Text-English language abstract supplied by authors] An alkaline medium with 0.05% of sodium hydroxide, cobalt chloride and 0.05% of straw purified lignin may be used for isolation of the lignin-destroying microorganisms from the dense contents of rumen and woods plant decaying remains and for cultivation of these microorganisms. References 6: 1 Russian, 1 Ukrainian, 1 Polish, 3 Western.

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USSR

UDC 576.8.093

EROKHIN, V. YE., and GORDIENKO, A. P.

PHOTOMETER FOR DETERMINATION OF MICROORGANISM BIOMASS BY CONTENT OF ATP

Kiev MIKROBIOLOGICHNIY ZHURNAL in Russian Vol 38 No 4, 1976 signed to press 20 Jun 75 pp 508-511

(Text-English language abstract supplied by authors) A design of a photometer simple and convenient in exploitation is described. The photometer permits determining up to  $10^{-6}$ - $10^{-7}$  g of ATP in 1 ml of a sample. The widely available devices produced by Soviet industry are used as main units of the photometer. The ATP-photometer may be used for various experimental studies. Figures 4; References 18; 5 Russian, 13 Western.

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USSR

ROMEYKO, I.N., BITYUKOVA, L.B., ZIL', L.M., and KUCHERENKO, V.I.,  
Ukrainian Scientific Research Institute of Agriculture

COMPARATIVE FEATURES OF METHODS FOR DETECTING PHYTOTOXIC PROPERTIES OF  
SOIL MICROORGANISMS

Kiev MIKROBIOLOGICHNIY ZHURNAL in Ukrainian Vol 38 No 4 76 signed to  
press 10 Apr 75 pp 456-461

[Text-English language abstract supplied by authors] The prevailing bacteria were isolated from different genetic horizons of soddy podzolic soil and from the root soil of winter wheat and maize grown permanently and in succession on deep chernozem. The bacteria phytotoxic properties were studied by different methods. It is shown that in mass isolation of inhibitor bacteria it is necessary to find optimal conditions under which the microbic metabolites manifest their phytotoxic effect on germination of crop seeds. On the basis of the experimental data a conclusion

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USSR

ROMEYKO, I.N., BITYUKOVA, L.B., ZIL', L.M., and KUCHERENKO, V.I.,  
MIKROBIOLOGICHNIY ZHURNAL Vol 38 No 4 76 pp 456-461

is drawn that traumatized seeds of winter wheat and liquid peptone-glucose medium, with soil extract, should be used to study phytotoxic properties of soil microorganisms. Figures 2; Tables 5; References 15: 12 Russian, 3 Ukrainian.

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USSR

UDC 582.28:620.193.8

LIKHTENSTEYN, V.N., KOVAL', E.Z., and SIDORENKO, L.P., Scientific Research Institute "Avtosklo", Institute of Microbiology and Virology, Academy of Sciences Ukrainian SSR

#### FEATURES OF FUNGAL CORROSION OF SOME CERAMIC GLASS MATERIALS

Kiev MIKROBIOLOGICHNIY ZHURNAL in Ukrainian Vol 38 No 4 76 signed to press 30 Oct 75 pp 480-482

[Text-English language abstract supplied by authors] Tests for fungal resistance performed for 11 varieties of glassceramic, epoxy enamel and furan glue composition resulted in establishing the fact that lithium disilicate,  $\alpha$ -quartz, petalite proved to be the most fungal resistant, mullite and furan glue composition less resistant and cordierite rutil- the least resistant. All the types of glassceramics are damaged most often by the species of aspergills, especially by *Aspergillus flavus* and *A. niger*. The fungi grow mainly on the surface as a film or as separate colonies only depending on the glassceramic composition. Cracking of

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USSR

LIKHTENSTEYN, V.N., KOVAL', E.Z., and SIDORENKO, L.P., MIKROBIOLOGICHNIY ZHURNAL Vol 38 No 4 76 pp 480-482

the surface that is explained by secretion of acids by the fungus, as well as subsequent penetration of the fungus hyphas inside the substrate were observed for cordierite. References 17: 15 Russian, 2 Western.

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USSR

UDC 576.8.093.3

MALASHENKO, YU.R., MUCHNIK, F.V., ROMANOVSKAYA, V.O., and GAGARINA, V.A.

THEORETICAL PROBLEMS OF METHODS FOR OPTIMIZING GROWTH CONDITIONS FOR  
MICROORGANISMS IN A CONTINUOUS PROCESS

Kiev MIKROBIOLOGICHNIY ZHURNAL in Ukrainian Vol 38 No 4 1976 signed to  
press 31 Dec 75 pp 449-455

[Text-English language abstract supplied by authors] The article deals with some methodic problems of the theory for optimizing the process of continuous cultivation of microorganisms. Optimization of the growth conditions in the continuous process is connected with necessity of periodic change in the nutrient media in the fermenter, which takes much time. To shorten the period the method, called by the authors "regrouping of the optimizable factors" is suggested for application. Formulas are derived to calculate the following: (1) time necessary for a complete change of the medium at the preset rate of dilution: (2) time taken for reaching

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USSR

MALASHENKO, YU.R., MUCHNIK, F.V., ROMANOVSKAYA, V.O., and GAGARINA, V.A.  
MIKROBIOLOGICHNIY ZHURNAL Vol 38 No 4 76 pp 449-455

the necessary concentration of the optimizable factors of the nutrient medium: (3) the content of substrates in the supplied medium providing for reaching the necessary concentration of the optimizable factors in its transition from the lower level to the upper one according to the planning matrix. The suggested method and formulas make it possible to realize optimization of microorganism growth under conditions of the continuous process, using the methods of mathematical planning of a multifactor experiment. Figures 2; Tables 2; References 11: 10 Russian, 1 Western.

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USSR

UDC 550.72:553.982(470.12)

NORENKOVA, I. K., BREZHNEVA, I. V., SVECHINA, R. M., KARPENKO, M. N., and KULIKOVA, YE. M., All-Union Petroleum Scientific Research Geological Prospecting Institute

ROLE OF MICROORGANISMS IN PETROLEUM OXIDATION IN THE YAREGO DEPOSIT

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 4 Jul/Aug 76 signed to press  
28 Feb 75 pp 724-728

(Text-English language abstract supplied by authors) Petroleum oxidation by microorganisms under aerobic conditions in the Yarega deposit amounted to 16.57%. As a result, the specific weight of oil increased and the content of methane hydrocarbons decreased by a factor of 2. Chemical oxidation of mono-, bicyclic aromatic and mononaphthene hydrocarbons was also found in the control experiment without microorganisms. Tables 3; References 6 (Russian)

1/1

USSR

UDC 575.23:576.851.5.095.337+546.41

BELOVA, M.M., and BELOV, I.S., Department of Microbiology, Kazan State University imeni V.I. Ul'yanov-Lenin

EFFECT OF CALCIUM IONS ON LATE STAGES OF GENETIC TRANSFORMATION IN BACILLUS SUBTILIS

Moscow MIKROBIOLOGIYA in Russian Vol 45 No Jul/Aug 76 signed to press  
5 Jan 76 pp 733-735

[Abstract] Effect of bivalent cations on the process of genetic transformation has been studied up to now only in transformation systems at the beginning of contact of the cells with DNA; their effect in later stages of transformation which take place after irreversible binding of DNA has not been studied as yet. The authors examined the efficiency of *B. subtilis* transformation in the later stages as a function of  $\text{CaCl}_2$  concentration in a solid medium (agar). The Ca ions stimulated genetic transformation. The solid medium employed is described. Figure 1; Table 1; References 7: 2 Russian, 5 Western.

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USSR

UDC 582.282.23.095.32

YERMAKOVA, I.T., and LOZINOV, A.B., Institute of Biochemistry and Physiology of Microorganisms, Academy of Sciences USSR

OXIDATION OF ALIPHATIC ALCOHOLS AND ACIDS BY YEAST ORGANISMS CAPABLE AND INCAPABLE OF GROWTH ON n-ALKANES

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 4 Jul/Aug 76 signed to press  
25 Feb 76 pp 640-645

[Text-English language abstract supplied by authors] Yeast cultures, capable and incapable of growth on hydrocarbons, were tested for their ability to oxidize aliphatic alcohols and acids, intermediate products of n-alkane degradation. The cultures belonging to 7 genera and 13 species did not grow on liquid paraffins and tetradecane. However, they grew on tetradecanol and oxidized aliphatic alcohols and fatty acids, the pattern of oxidation of the substrates being the same as in the case of alkane-oxidizing yeast cultures grown on glucose. None of 45 yeast strains (12 genera and 36 species) which did not grow on paraffin was able to oxidize

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USSR

YERMAKOVA, I.T., and LOZINOV, A.B., MIKROBIOLOGIYA Vol 45 No 4 Jul/Aug  
pp 640-645

tetradecane. As follows from this and earlier evidence (Lozinov et al. 1976a), the only reaction typical of yeasts capable of growth on n-alkanes is the oxygenase reaction of their oxidation to alcohols. Figures 4; Table 1; References 11: 5 Russian, 6 Western.

2/2

USSR

UDC 576.851.9.095

MONOSOV, Z.Z., AND NETRUSOV, A.I., Biological Faculty, Department of Microbiology, Moscow State University imeni M.V. Lomonosov

LOCALIZATION OF ENERGY GENERATORS IN METHANE OXIDIZING BACTERIA

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 4 Jul/Aug 76 signed to press 8 Jan 76 pp 598-601

[Text-English language abstract supplied by authors] Cytochromes a, b, and c, and their quantitative distribution in the cells, were studied by means of differential spectra in obligate methane oxidizing bacteria, *Methylosinus trichosporium* with the serine pathway of methane carbon assimilation and *Methylomonas agile* with the ribulose phosphate pathway of methane carbon assimilation, and different types of topography of intracytoplasmic membranes. The membranes are involved in processes of coupled respiration which was confirmed by cytochemical reactions employed for studying the terminal step of the electron transport chain and  $Mg^{2+}$ -stimulated ATPase. Figures 3; Table 1; References 21: 2 Russian, 19 Western.

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USSR

UDC 671.46

BERESTETSKIY, O.A., TORZHEVSKIY, V.I., and MOCHALOV, YU.M., Ukrainian Scientific Research Institute of Agricultural Microbiology

FEATURES OF THE MICROFLORA OF SODDY-PODZOLIC SOIL DURING GROWING OF AGRICULTURAL PLANTS IN MONOCULTURE AND IN CROP ROTATION

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 4 Jul/Aug 76 signed to press 16 Jan 75 pp 710-716

[Text-English language abstract supplied by authors] Structural organization of microbial populations in soddy-podzolic soil was studied during growth of agricultural plants in monoculture and in crop rotation. The content of bacteria and their biomass decreased when plants were grown in monoculture. The content of actinomycetes, bacilli and oligonitrophilic microorganisms increased in soil during crop rotation as compared with monocultures, suggesting a higher rate of mobilization processes. The content of microscopic fungi in soil increased when lupine was grown in

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USSR

BERESTETSKIY, O.A., TORZHEVSKIY, V.I., and MOCHALOV. YU.M., MIDROBIOLOGIYA  
Vol 45 No 4 Jul/Aug pp 710-716

monoculture. Growth of plants in monoculture affects the cenotic structure of soil microflora. The composition of active soil microflora was characterized by a wider spectrum of microbial forms during crop rotation cf. monocultures. Figures 2; Tables 3; References 20: 15 Russian, 5 Western.

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USSR

UDC 581.165.514

MEL'NICHENKO, L. A., and KLIMENKO, P. L., Institute of Colloid Chemistry and Water Chemistry, Academy of Sciences UkrSSR

AN INVESTIGATION OF EXOMETABOLITES OF BLUEGREEN AQUATIC PLANTS THAT IMPART ODOR TO WATER

Moscow BIOLOGICHESKIYE NAUKI in Russian No 7, 1976 signed to press 22 Oct 75  
pp 32-35

[Abstract] Previous literature indicated that phenols, hydrocarbons and phosphates are the chief causes of water odors. The present study concerned the chemical nature of odorants from both test and actual water samples. Actual samples came from reservoirs of the city of Kiev, taken both in the flowering period and in autumn. Test samples were cultivated from microcysts for 10-50 days under laboratory conditions, in distilled water. Methods for preparing concentrates of the specimens included freezing, extraction using solutions of low boiling points, and distilling in cooled retorts. Then the separation of concentrates and their measurement was accomplished using gaseous liquid

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USSR

MEL'NICHENKO, L. A., and KLIMENKO, P. L., BIOLOGICHESKIYE NAUKI No 7, 1976  
pp 32-35

chromatography and infrared spectroscopy. More than 30 components were distinguished, of which the principle ones proved to be of a phenol nature. The ultraviolet spectra of the concentrates revealed nothing. Results showed that qualitative and quantitative components of aromatic products from aquatic plants are unequal and depend on natural conditions and development stage. Alkylphenol substances are produced during decomposition; along with amines, sulphuric acids and phenols, certain obscure bioproducts are also found that make water purification difficult. Figure 1; references 17: 7 Russian, 10 Western.

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USSR

CHECHURA, A. A. and REVAZOV, V. G.

APPARATUS FOR GROWING OF MICROORGANISMS

USSR Authors' Certificate No. 480755, Filed 7/01/74, No. 1985057, Published 26/11/75

[From REFERATIVNYY ZHURNAL BIOLOGIYA No 8(I) 1976 Abstract No 8L430P by A. R.]

[Text] The apparatus suggested is distinguished by the fact that to intensify the process of growth of microorganisms, the apparatus is equipped with an additional agitator, located on the opposite end portion of the container, and a guide cylinder with baffles, and the mixing devices are connected to circular reflectors, while the foam damper is attached between the guide cylinders.

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USSR

SHILOVA, M. A. and TARAKANOVA, Ye. G.

STUDY OF BACTERIAL CONTAMINATION OF CHEMICALLY PURE INDUSTRIAL WATER AND SOLUTIONS

Yerevan V S'YEZD VSES. MIKROBIOL. O-VA. SEKTS.: "EKOL. MIKROORGANIZMOV".  
TEZISY DOKL. in Russian, 1975, p. 126.

[From REFERATIVNYY ZHURNAL BIOLOGIYA No 1(I) 1976 Abstract No 7L745 by A. R.]

[Text] A bacteriological study is performed of deionized water and various technological solutions used for the manufacture of electric vacuum devices. 33 species of microorganisms are separated and determined: Actinomyces, Micrococcus, Bacillus, Bacterium, Pelodictyon, Gallionella, Achromatium. In addition to the study of the influence of the corresponding microflora on the quality of the instruments produced, studies of certain bactericidal substances are performed.

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USSR

KUZNETSOV, A. M., RUDEVICH, G. A., STABNIKOV, V. N. and MIKHAYLOV, Ye. L.

A SURFACE METHOD OF CULTIVATION OF MICROORGANISMS

Authors' Certificate No. 414303, Filed 26/06/70, Published 29/01/75

[From REFERATIVNYY ZHURNAL BIOLOGIYA No 1(I) 1976 Abstract No 1L717P by A. R.]

[Text] The method suggested differs that in order to maintain a constant temperature of the medium while intensifying the process of growth, aeration of the nutrient medium in the initial stage of growth is by hot air, while the medium is moistened considering the loss of moisture upon aeration to a moisture content of greater than 60%. Aeration is performed by air at 50 C, relative humidity 30%.

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USSR

DENIS, A. D.

A METHOD OF PREPARATION OF A SOLUTION OF MINERAL NUTRIENT SALTS FOR GROWING MICROORGANISMS

USSR Author's Certificate No. 425934, Filed 9/06/72, Published 16/10/74

[From REFERATIVNYY ZHURNAL BIOLOGIYA No 1(I) 1976 Abstract No 1L716P by A. R.]

[Text] The method suggested differs in that in order to simplify and reduce the cost of the process of acidification of the water, it is acidified to a pH preferably equal to 2-2.5, then the microelements are introduced as a part of the solution of mineral nutrient salts acidified to the given value of pH, which is separated from the total quantity of prepared solution, then mixed back with it. 1-10% of the total quantity of mineral salt solution is used.

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USSR

UDC 576.8

MATVEYENKO, P. S. and SEMENETS, P. A.

AN APPARATUS FOR GROWING NUTRIENT YEAST BIOMASS

PISHCH. PROM-ST'. RESP. MEZHVED. NAUCH.-TEKHN. SB. in Russian, No. 20, 1975, pp. 47-49

[From REFERATIVNYY ZHURNAL BIOLOGIYA No 1(I) 1976 Abstract No 1L675 from the resume]

[Text] A design is described and results presented from experimental studies of a new apparatus for growing of nutrient yeasts from spent mash, differing from existing designs of apparatus in that the culture medium is aerated using air collected from the surrounding environment by means of jet pumps. The culture medium in the tank is recirculated using a fan type jet pump. The results of the experimental studies demonstrate the high effectiveness of the apparatus suggested.

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USSR

DZHAVAKHIYA, G. Ya., KALUNYANTS, K. A., LOSYAKOVA, L. S. and VAGANOVA, M. S.

INFLUENCE OF INOCULATION MATERIAL ON BIOSYNTHESIS OF AN AMYLASE CULTURE OF  
Bac. subtilis 103

FERMENT. I SPIRT. PROM-ST' in Russian No 3, 1976 pp 36-39

[From REFERATIVNYY ZHURNAL BIOLOGIYA No 8(I) 1976 Abstract No 8L493]

[Text] It is shown that the highest amylase activity in culture fluid is observed when the medium is inoculated with a spore inoculation material grown in the form of a film on a liquid nutrient medium with starch or maltose. It is noted that this inoculation material has the longest storage life.

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USSR

LAUKEVITS, Ya. Ya., SMIRNOV, G. G., VIYESTUR, U. E., AUZIN'SH, E. Ya. and  
OZOLIN'SH, G. Ya.

A METHOD OF PRODUCTION OF A LYSINE FEED CONCENTRATE

USSR Authors' Certificate No. 480397, Filed 30/06/72, No 1803285, Published  
3/11/75

[From REFERATIVNYY ZHURNAL BIOLOGIYA No 8(I) 1976 Abstract No 8L487P by A. R.]

[Text] The method suggested is distinguished by the fact that to improve the bulk properties, prevent the formation of build-up on the walls of the drying chamber and to simplify standardization of the finished product, the powdered filler is introduced to the drying chamber simultaneously with spraying of the culture fluid. The method suggested allows continuous conduct of the process, eliminates the cumbersome operation of grinding, and also combines the operations of drying and standardization.

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USSR

BYKHOVSKIY, Ye. G., NESHCHADIM, A. G., CHERNOVA, O. T. and NESMACHNAYA, N. K.

A METHOD OF DEHYDRATING THE BIOMASS OF MICROORGANISMS

USSR Authors' Certificate No. 478858, Filed 7/08/73, No. 1954318, Published 28/10/75

[From REFERATIVNYY ZHURNAL BIOLOGIYA No 8(I) 1976 Abstract No 8L486 by A. R.]

[Text] The method suggested for dehydration of the biomass of microorganisms, for example yeasts, is distinguished by the fact that to prevent caking of the biomass, reduce the loss of vitamins and nitrogenous substances in the biomass and intensify the process, a hydrophilic additive is added to the hydrophobic solvent in a quantity of 3-5% of the weight of the solvent.

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USSR

MAKAROV, N. A. and SKIBA, A. I.

A VIBRATION AGITATOR

USSR Authors' Certificate No. 476015, Filed 1/06/72, No. 1791023, Published 26/11/75

[From REFERATIVNYY ZHURNAL BIOLOGIYA No 8(I) 1976 Abstract No 8L434P by A. R.]

[Text] The vibration agitator suggested is distinguished by the fact that to intensify agitation and create an overall circulation loop for the fluid, the container is divided over the height of the labyrinth in the diametric plane by a barrier, and on the upper and lower surfaces of the blades, located on different sides of the barrier are check valves. A diagram of the vibration agitator is presented.

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USSR

SHAKUN, L. A., KOTELEV, V. V., GNIDASH, L. N. and KRASILYA, I. I.

AN APPARATUS FOR GROWING OF MICROORGANISMS

USSR Authors' Certificate No. 442202, Filed 23/10/72, No. 1838581, Published 18/08/75

[From REFERATIVNYY ZHURNAL BIOLOGIYA No 8(I) 1976 Abstract No 8L433P by A. R.]

[Text] The apparatus suggested is distinguished by the fact that to intensify the process of growing of microorganisms, it is equipped with valves (V) located over the apertures in the disc. The V are made in the form of flat circles. The V installed over the apertures in the discs attached to the shaft are located near the center, those installed over the apertures in discs attached to the outer wall of the container -- nearer the periphery.

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USSR

YEROFEYEV, A. A.

AN APPARATUS FOR GROWING OF MICROORGANISMS

USSR Author's Certificate No. 476312, Filed 2/12/75, No. 1852920, Published 31/01/75

[From REFERATIVNYY ZHURNAL BIOLOGIYA No 8(I) 1976 Abstract No 8L432P by A. R.]

[Text] The apparatus suggested is distinguished by the fact that to intensify the process of growing of microorganisms, along the axis of the apparatus is a split pipe, each section is equipped with agitating and foam-damping devices freely seated on the pipe and conical plates, as well as a circulation system, including pipes and a pump, the intake tube of which is connected to the lower portion of the section, while the delivery end is connected to the pipe over the agitating device. The nutrient medium feed tube is connected to the intake line of the circulation pumps. It is equipped with baffles located in each section except the lowest. The conical plates are installed with their large ends downward. The mixing devices and plates are installed so that they can rotate in opposite directions and made in the form of Segner's wheels.

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USSR

KERIMOV, T. M.

AN APPARATUS FOR CULTIVATION OF MICROORGANISMS

USSR Author's Certificate No 472152, Filed 15/02/73, No 1934833, Published 11/09/75

[From REFERATIVNYY ZHURNAL BIOLOGIYA No 8(I) 1976 Abstract No 8L431P by A.R.]

[Text] In order to intensify the process of foam damping and assure additional dispersion of the medium, slit ejectors are set in the upper portion of the circulation pipes. A diagram shows the apparatus suggested.

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## Military Medicine

### EAST GERMANY

MOCKER, R., major, MD, and PINZER, K., lieutenant-colonel, MD

#### DETERMINATION OF THE SILENCING EFFECTIVENESS OF PILOT HELMETS

Greifswald ZEITSCHRIFT FUER MILITAERMEDIZIN in German Vol 17 No 4, Aug 76  
signed to press 9 Jul 1975 pp 203-204

[Abstract] The noise-silencing effectiveness of three pilot helmets was evaluated in the 250 to 8,000 Hz range with a MA 30 clinical audiometer made by the Praecitronic State Enterprise in Dresden. The measurements were carried out in a sound-isolated test chamber with 10 audiologically healthy test persons. The measurements involved determining the hearing thresholds with and without the helmet and comparing the results. The results were related to the hearing thresholds of the test persons for the individual frequencies used. There were significant differences among the three helmet types. It was concluded that helmets which enclose the entire head are more effective than those which enclose only the ear or block the auditory organs. However, it is essential that the helmet be of the proper size. The test method used may also be used to check whether the helmet is properly fitted. Figure 1; table 1; references 15: 11 German, 2 Russian, 1 Bulgarian and 1 Western.

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## Pharmacology

USSR

BADAYEVA, L. N., All-Union Research Institute of Hygiene and Toxicology of Pesticides, Polymers, and Plastics, Kiev

EFFECT OF POLYCHLOROCAMPHENE ON SOME ORGANS AND THEIR NERVOUS APPARATUS IN PREGNANT ANIMALS

Moscow BYULLETIN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in English Vol 82 No 8 Aug 76 p 947

(Text-English language abstract supplied by author) Experiments conducted on pregnant albino rats showed that in daily oral administration of polychlorocamphene—a chlorine organic compound widely used in agriculture—in a dose of 12 mg/kg (1/20 LD<sub>50</sub>) there was interrelation between the structural and the enzymatic changes in the nerve elements of the organs under study. They consisted in the focality of the affection of the nervous structures of the brain cortex, and in increase in the destructive processes involving the nervous structures of the heart, uterus, and spinal cord at the end of pregnancy. A peculiar enzymatic reconstruction with the preservation of the activity of the cholinesterase (CE)-positive pericellular structures (whose number was markedly decreased in comparison with control)

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USSR

BADAYEVA, L. N., BYULLETIN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY Vol 82 No 8 p 947

was noted against the background of reduction of the CE activity. The prevalence of destructive processes by the end of pregnancy was conditioned by a considerable accumulation of the preparation in the heart, uterus, and the brain (as shown by thin-layer chromatography). The presence of polychlorocamphene in the organs of fetuses pointed to disturbances in the permeability of the transplacental barrier and to a possible influence of the preparation on the development of the fetal nervous system.  
References 7 (Russian)

2/2

USSR

UDC 576.147

CHISTYAKOV, V.V., and GEGENAVA, Second Moscow State Medical Institute  
imeni N.I. Pirogov

MECHANISM OF OPIATE INHIBITION OF MITOCHONDRIAL OXIDATIVE PHOSPHORYLATION

Moscow BIOKHIMIYA in Russian Vol 41 No 7 Jul 76 signed to press 21 Jan 76  
pp 1272-1278

[Text-English language abstract supplied by authors] Effect of morphine, codeine, dionine and nalorphine on oxidative phosphorylation in rat liver mitochondria was studied. Morphine is found to inhibit both ATP-synthetase and ATP-ase activities in mitochondria, but not in submitochondrial particles. Morphine-suppressed oxidative phosphorylation was competitively reversed with high concentrations of ADP but not of inorganic phosphate. The effect of other opiates (i.e. codeine, dionine, nalorphine) was similar. It is suggested that opiates inhibit the transport of adenine nucleotides through inner mitochondrial membrane, as does atractyloside. The significance of hydrophobic interaction between the inhibitor and adenine

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USSR

CHISTYAKOV, V. V., and GEGENAVA, BIOKHIMIYA Vol 41 No 7, Jul 76 pp 1272-1278

nucleotide translocase is outlined, since the degree of the inhibition of oxidative phosphorylation is increased with the increase in the number of non-ionized opiate molecules (at alkaline pH values) and in the length of the carbon chain of narcotic molecule as follows: morphine-codeine-dionine-nalorphine. Figures 3; tables 2; references 24: 1 Russian, 23 Western.

2/2

USSR

UDC 613.164:547.21:612.015.348

ALIYEVA, R. KH., ABASOV, D. M., and KASIMOVA, V. M.

THE QUESTION OF COMBINED ACTION OF NOISE AND PETROLEUM HYDROCARBONS ON SOME INDICES OF PROTEIN METABOLISM UNDER EXPERIMENTAL CONDITIONS

Baku AZERBAYDZHANSKIY MEDITSINSKIY ZHURNAL (Azerbaijdzhan Medical Journal) in Russian No 6, Jun 76 pp 60-64

[Translation] In repetitive experiments on 60 male rabbits the effect of intensive and stable wide-band noise at the level of 110 dB "A" and the effect of noise plus total hydrocarbon vapors at a concentration of 9-11.6 mg/l were studied. The experimental results have shown that a 5 hr daily exposure for 5 days weekly, after 16 days and 1 month (recovery period) leads to changes in blood protein content after intoxication manifested by lowering of the total protein and albumin level, elevation of beta- and gamma-globulins (along with lowering of albumin-globulin coefficient) and lowering of residual nitrogen. We assume that the noise shows an undesirable effect; the action of the wide-band stable intensive noise combined with high concentrations of hydrocarbons results in higher biological effect than in case of these factors taken individually. Tables 2; figure 1; references 10: all Russian.

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USSR

ANDREYEV, V.L., and YAKHNO, N.N., First Moscow Medical Institute imeni I.M. Sechenov

CHANGES IN THE STAGES OF NOCTURNAL SLEEP OF MAN IN DISTURBANCE OF THE HYPOTHALAMO-STEM STRUCTURES

Moscow BYULLETIN' EKSPERIMENTAL'NOY BIOLOGII 1 MEDITSINY in English Vol 82 No 8 Aug 76 p 940

[Text-English language abstract supplied by authors] Polygraphic study of nocturnal sleep in 18 patients with affection of the hypothalamo-mesencephalic structures showed a reduction of the duration of the II stage and a prolongation of the III and IV stages of slow sleep in comparison with the corresponding indices in the patients with involvement of the ponto-bulbar structures (9) and in healthy persons (8) of control group. Analysis of the qualitative indices of the EEG of slow sleep (a relative amount of the sleep spindles per 1 min of the II stage,  $\Delta$ -index and the  $\Delta$ -wave amplitude at the II and the IV stages) demonstrated a tendency to

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USSR

ANDREYEV, V.L., and YAKHNO, N.N., BYULLETIN' EKSPERIMENTAL'NOY BIOLOGII 1 MEDITSINY Vol 82 No 8 Aug 76 p 940

their increase in the patients with affection of the hypothalamo-mesencephalic structures. Patients of this group showed a decreased frequency of spontaneous changes of sleep from deeper to more superficial stages. References 11: 7 Russian, 4 Western.

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USSR

ZABLUDOVSKIY, A.L., MAYZELIS, M.YA., and KRUGLIKOV, R.I., Moscow Research Institute of Psychiatry, Ministry of Health RSFSR; Institute of Higher Nervous Activity and Neurophysiology of the Academy of Sciences USSR

PECULIARITIES ATTENDING THE FUNCTIONS OF THE HIGHER PORTIONS OF THE CENTRAL NERVOUS SYSTEM IN RATS SUBJECTED TO ACUTE HYPOXIA DURING THE ANTENATAL PERIOD

Moscow BYULLETIN' EKSPERIMENTAL'NOY BIOLOGII 1 MEDITSINY in English Vol 82 No 8 Aug 76 p 930

[Text-English language abstract supplied by authors] A reduction of motor activity, and of the orientative reflex, its more rapid extinction in comparison with control were seen in sexually mature rats which sustained acute hypoxia during the antenatal period. The experimental animals displayed disturbances of conditioned reflex activity indicating worse fixation of the temporary association, weakening of the inhibitory process and

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ZABLUDOVSKIY, A.L., MAYZELIS, M.YA., and KRUGLIKOV, R.I., BYULLETIN' EKSPERIMENTAL'NOY BIOLOGII 1 MEDITSINY Vol 82 No 8 Aug 76 p 930

reduction of the nervous process mobility. Epileptiform convulsions occurred in presentation of "difficult" experimental tasks. There was also noted an increase in convulsiveness after the administration of threshold doses of corasol. Tables 4; References 10; 6 Russian, 4 Western.

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USSR

MEYERSON, F.Z., and RADZIEVSKIY, S.A., Institute of General Pathology and Pathological Physiology, Academy of Medical Sciences USSR, Moscow

INFLUENCE OF ADAPTATION TO HIGH ALTITUDE HYPOXIA IN EARLY ONTOGENESIS ON PARAMETERS OF HIGHER NERVOUS ACTIVITY

Moscow BYULLENTIN' EKSPERIMENTAL'NOY BIOLOGII 1 MEDITSINY in English Vol 82 No 8 Aug 76 p 903

[Text-English language abstract supplied by authors] Newborn male and female Wistar rats were adapted to hypoxia in a pressure chamber. Adaptation was started from the "altitude" of 1000m, 1 hour daily, and then the time and the intensity of hypoxic actions were gradually increased: beginning from the 17th day the animals were subjected to adaptation to the "altitude" of 5000m, for 5 hours, 5 days a week. The defence conditioned reflex of active avoidance was provoked in the animals after 2-month adaptation. A tendency to a more rapid elaboration of the reflex

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USSR

MEYERSON, F.Z., and RADZIEVSKIY, S.A., BYULLENTIN' EKSPERIMENTAL'NOY BIOLOGII 1 MEDITSINY Vol 82 No 8 Aug 76 p 903

and a markedly enhanced degree of its retention in comparison with control was revealed in the adapted males. No significant changes in the elaboration and retention of the reflex were found in the female animals adapted to hypoxia under analogous conditions. References 8: 5 Russian, 3 Western.

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USSR

UDC 616.831-003.215-092.9.001.57

VORONTSOVA, S. A., Saratov Medical Institute

A METHOD OF INDUCING HEMORRHAGES INTO THE BRAIN OF RATS BY THE COMBINED ACTION OF LOUD NOISE AND HYPOXIC HYPOXIA

Moscow PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTAL'NAYA TERAPIYA in Russian  
No 4, 1976 pp 90-91

[Abstract] Exposure of rats to loud noise combined with acute hypoxic hypoxia proved to be more stressful than exposure to either noise or hypoxia alone and it induced more small and large hemorrhages into the animals' brain. For example, the animals subjected to noise plus hypoxia, hypoxia alone, and noise alone suffered 13.8, 11.6, and 9.6 small hemorrhages, respectively. Moreover, the hemorrhagic area in the animals that received the combined stress was more than 8 times larger than in those subjected to noise or hypoxia alone. Table 1; references 9 (Russian).

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USSR

UDC 613.6:612.766.1):612.313

SVISTUNOV, N. T., Leningrad

STRESS IN THE PHYSIOLOGICAL FUNCTIONS OF ELECTRICAL MACHINE TESTERS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 7  
Jul 76 signed to press 16 Mar 76 pp 7-11

(Text-English language abstract supplied by author) Electric machine testers are subject to a combined action of industrial environment factors and, directly, of the very process of their work-duties that make greater demands on such higher mental functions as attention and memory which are occupationally significant for them. The intensity of the physiological indicators under study, subjective and objective symptoms and syndromes justify including the work of testers, in the main, in the II degree of labor intensity. Measures for improving the work conditions of testers and relieving the intensity of their labor are suggested. Figure 1; Table 1; References 5 (Russian).

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USSR

UDC 617-001.34-057:622)-084

ZVER'KOV, S. N., STAROVOYTOV, YE. I., MARKIN, M. A., VAZHOVA, S. K., and TUGOLUKOV, G. I., Zapolyarniy and Berezovskiy Cities, Heavy Metallurgical Combine "Pechenganikel'", Institute of Prophylaxis of Pneumoconioses and Safety Engineering

EXPERIENCE IN CONTROL OF VIBRATION DISEASE IN MINERS AT THE "PECHENGANIKEL"  
(NICKEL MINERS) COMBINE

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 7  
Jul 76 signed to press 3 Sep 75 pp 18-21

(Text-English language abstract supplied by authors) Up-to-date experience in preventing vibration disease at underground nickel mines of the "Pechenganikel" combine is discussed. A complex set of engineering and technical and organizational measures aimed at controlling vibration disease have been worked out and introduced at the mines of the combine. Significant additions to engineering and technical endeavors include medical measures of preventing the occurrence of vibration disease. All this helped to appreciably improve the working conditions of miners exposed to the hazards of vibration and to drastically reduce the incidence of vibration disease. Tables 2; No references.

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USSR

UDC 613.6:669.71:658.387

SOLONIN, YU. G., SHCHERBAKOV, S. V., BOLDOVSKAYA, V. P., KOZLOVSKIY, V. A., KUZNETSOVA, Z. M., and PASTUKHINA, R. I., Sverdlovsk Institute of Labor Hygiene and Occupational Diseases

PHYSIOLOGICAL-HYGIENIC COMPARISON OF VARIOUS ORGANIZATION OF WORK IN RELATION  
TO MECHANIZATION AND AUTOMATION OF THE TECHNOLOGICAL PROCESS IN ALUMINUM  
ELECTROLYSIS

Moscow GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian No 7  
Jul 76 signed to press 4 Jan 76 pp 4-7

(Text-English language abstract supplied by authors) In two aluminum electrolysis buildings with different patterns of labor organization and dissimilar work and rest schedules physiological-hygienic investigations were carried out. With an excessive reduction of the number of workers in the electrolysis teams owing to a partial mechanization and automation of the production process, the physiological energy expenditures in each worker go up and the effect of adverse environmental conditions increases. The work schedule providing for an intrashift rest in air-conditioned rooms,

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USSR

SOLOVIN, YU. G., SHCHERBAKOV, S. V., BOLDOVSKAYA, V. P., KOZLOVSKIY, V. A., KUZNETSOVA, Z. M., and PASTUKHINA, R. I., GIGIYENA TRUDA I PROFESSIONAL'NYYE ZABOLEVANIYA No 7 Jul 76 pp 4-7

proposed by the authors, yielded a positive physiological and hygienic effect in both forms of the work cycle. Allowances for the number of the employees and other innovations in the industry should also be substantiated from the physiological-hygienic standpoint. Table 1; No references.

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USSR

UDC 613.1:612.225:616.12-073.97

KAFAROV, K. A., Chair of Hygiene, Central Order of Lenin Institute of Physical Education

CHANGES IN THE ACTIVITY OF HEART (EKG DATA) AND HEAT EXCHANGE PROCESSES (BODY TEMPERATURE) IN HEALTHY INDIVIDUALS CAUSED BY HIGH TEMPERATURE OF THE SURROUNDINGS)

Baku AZERBAYDZHANSKIY MEDITSINSKIY ZHURNAL (Azerbaijdzhan Medical Journal) in Russian No 6, Jun 76 pp 19-21

[Abstract] Hot temperature of the surroundings leads to activation of heart muscle functions and elevated body temperature of healthy subjects. Prolonged effect of 70°C temperature overloads the right ventricle, while a 100°C temperature leads to changes in the exchange processes in left ventricle. Body temperature changes depend on the duration of the stay in hot conditions rather than on the temperature itself. An important role in affecting the physiological functions by extremely high temperatures is played by functional disturbances of the exchange processes in heart muscle rather than by heat exchange processes (body temperature). No tables or figures; references 5: all Russian.

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## Public Health

USSR

### PUBLIC INSPECTION FOR LABOR PROTECTION AND SAFETY TECHNOLOGY

Moscow MONTAZHNYYE I SPETSIAL'NYYE RABOTY V STROITEL'STVE in Russian 24 Oct 76 p 24

[Abstract] The annual inspection of labor protection and safety technology at all organizations and enterprises in the ministry is surveyed. More than 3,000 brigades in several organizations (Glavteplomontazh, Glavelektromontazh, Glavmontazhavtomatika, and others) have assumed obligations to work throughout the 10th Five Year Plan without accidents and to increase productivity while strictly adhering to safety rules. Progressive labor methods which reduce heavy and labor intensive work are being introduced at many organizations. The ministry and the presidium of the construction and industrial construction materials trade union noted that during 1975 the ministry reduced production accidents by 8%. Glavteplomontazh and Glavnefttemontazh have reduced production accidents by 12% and lost days by 13%. Other organizations have also reduced accidents. These are the results of carrying out the measures of the ministry's comprehensive plan for improving labor and living conditions. The

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USSR

MONTAZHNYYE I SPETSIAL'NYYE RABOTY V STROITEL'STVE 24 Oct 76 p 24

inspection also examined results of measures for freeing women from heavy, laborious, and dangerous work. Many auxiliary production operations are being automated, modern and safe materials are being introduced. These and other measures have released about 700 women from heavy and harmful work. A number of organizations have grossly violated work safety. The highest number of accidents were at the following trusts: Uralstal'konstruktsiya, Dal'stal'konstruktsiya, Sibtekhmontash, and the Tula metal structure plant. The lack of the necessary sanitary conditions has caused occupational and other illnesses. The inspection also examined the observation of laws protecting adolescents. Specialists from various scientific research institutes in the construction industry assisted in developing measures for protection. The board of the ministry and the presidium of the trade union have given awards to the trusts with outstanding safety records. The inspection showed that the ministry's organizations still have unutilized reserves for further improving work conditions and safety.

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USSR

UDC 658.382.2

ZLOTNIK, SH. L., Department Chairman, All-Union Scientific Research Institute of Mechanical Engineering

ON COORDINATING PLANS FOR THE DEVELOPMENT OF STATE STANDARDS IN THE AREA OF OCCUPATIONAL SAFETY

Moscow STANDART EKSPRESS INFORMATSIYA in Russian Vyp 3 [643], 1976 signed to press 1 Jun 76 pp 1-4

[Abstract] During the first stage of the development of the Occupational Safety Standard system, planned for 1973-1975, the ministries and departments promulgated more than 100 coordinated state standards. In the tenth five-year plan new standards are projected for types of dangers and harmful industrial factors, safety requirements for industrial equipment and processes, and requirements for worker protection. The sequence of development and coordination of safety standards will be improved, documentation and review will be unified, terminology and definitions will be standardized, standards for training specialists in industrial safety will be expanded and those for

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USSR

ZLOTNIK, SH. L., STANDART EKSPRESS INFORMATSIYA Vyp 3 [643], 1976 pp 1-4

noise, vibration, ultrasound and laser light levels and for fire, explosion and electrical safety will be developed, as will standards for safety in trucks, foundries, ultrasound and polygraphic devices, drilling equipment, machine tools, port and mooring equipment, domestic electrical appliances and industrial equipment. Of the standards planned, 25 concern needs for testing protective systems and particular attention is paid to the introduction of standards for agriculture.

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USSR

MALENCHENKO, A.F., SEREGIN, V.V., and KUZMINA, T.S., Institute of Nuclear Power Engineering, Academy of Sciences Byelorussian SSR

IODINE METABOLISM IN THE THYROID GLAND IN CHRONIC URANIUM INTOXICATION

Moscow BYULLETIN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY in English Vol 82 No 8 Aug 76 p 945

[Text-English language abstract supplied by authors] The exchange of radioactive and stable iodine was studied for 21 days after the  $I^{131}$  injection in the thyroid gland and the blood of rats against the background of chronic uranium intoxication. The latter was accompanied by a decrease in the number of iodine-transport loci of the gland, as well as of the value of the intrathyroid iodine pool and of the stable iodine concentration in the thyroid tissue. The compensatory reaction of the thyroid gland was expressed in the increase of its mass and the rate of the thyroid metabolism as well. References 6: 5 Russian, 1 Western.

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## Veterinary Medicine

### HUNGARY

ROMVARYNE, SZAILER, E., SELLYEY, Gyulane, National Animal Health Institute

#### RAPID METHOD FOR THE DETERMINATION OF TOXIN PRODUCTION BY MOLD STRAINS ISOLATED FROM DOMESTIC FODDER

Budapest MAGYAR ALLATORVOSOK LAPJA in Hungarian Vol 32, No 8, Aug 76 signed  
to press 9 Nov 75 pp 521-524

[Abstract] A simple, rapid method to determine the toxin production of domestic mold strains is reported. One solid and one liquid culture medium was employed. A total of 42 mold strains were studied, belonging mostly to the Fusarium, Aspergillus and Penicillium species. In both media, abundant masses of mycelia and spores formed after 5 days incubation at 25°C. Chloroform at 60°C was used for extraction. Layer chromatographic determinations were carried out to determine the following 10 mycotoxins: aflatoxin, butenolide, citrinine, diacetoxyscirpenole, F<sub>2</sub>-toxin, fuzarenone-X, ochratoxin, patuline, sterigmatocystine and T<sub>2</sub>-toxin. Of the 42 strains tested, 15 produced mycotoxin. The method is suited for a rapid orientation concerning the incidental mycotoxin production in feed stocks and as a partial solution

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### HUNGARY

ROMVARYNE, SZAILER, E., SELLYEY, Gy. (Mrs), MAGYAR ALLATORVOSOK LAPJA Vol 32,  
No 8, Aug 76 pp 521-524

of analytical problems in the manufacture of foodstuff. References: 5  
Western.

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## HUNGARY

SZABO, Janos, Dr, VERMES, Laszlo, Dr, DUNKA, Bela, Animal Health Institute of Debrecen; Scientific Research Institute of Water Utilization, Budapest; Agricultural Production Cooperative, Debrecen

### LATEST FINDINGS ON THE STATE OF HEALTH OF LIVESTOCK GRAZED ON PASTURES IRRIGATED WITH CITY SEWAGE

Budapest MAGYAR ALLATORVOSOK LAPJA in Hungarian Vol 32, No 8, Aug 76 signed to press 13 Jun 75 pp 496-501

[Abstract] Livestock was kept grazing for 6 months each year over a 4 year period on isolated pastures which were irrigated with city sewage water. A total of 561 heifers, 192 cows, 34 foals and 1700 sheep were involved in the study. The results showed a weight gain and an absence of brucellosis, leptospirosis, tuberculosis or parasitic diseases. Milk production increased by 1.5-2 Liters. During the experimental period, there was no increase in the number of animals which had positive serological reactions or intradermal tuberculin test. By the end of the grazing seasons, there was a 50-66% reduction of pathogenic organisms causing mastitis. The hygienic state of the

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## HUNGARY

SZABO, J., VERMES, L., DUNKA, B., MAGYAR ALLATORVOSOK LAPJA Vol 32, No 8, Aug 71 pp 496-501

milk was about the same as of cows kept in stalls. A higher bacterial contamination was present in 30% of the 374 irrigated grass samples tested but caused no infection among the grazing animals. 30% of the irrigated grass samples showed higher contamination than those watered from above. Bacterial contamination was highest in grass samples irrigated with sewage, lower in samples not irrigated at all and lowest in samples irrigated with clean water. The bacterial count of samples taken immediately after irrigation was similar to the count in the sewage itself. The count in the grass samples decreased by 50% after 48 hours and by 1-2 orders of magnitude after 3 weeks. Salmonellae were found in two of the samples taken after irrigation. Grass contamination was only slightly influenced by weather during the grazing season although sunshine and storms reduced the count. Maintenance of local quarantine during the grazing season is considered necessary. References: 3 Hungarian.

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HUNGARY

KOVACS, Tibor, Dr., Megye Veterinary Specialist (reporter)

MEETING ON THE CURRENT PROBLEMS IN PUBLIC HEALTH, ANIMAL HEALTH  
AND ENVIRONMENTAL PROTECTION ASSOCIATED WITH THE USE OF LIQUID  
MANURE FERTILIZER

Budapest MAGYAR ALLATORVOSOK LAPJA in Hungarian, Vol 32, No 8,  
Aug 76 pp 546-547

[Abstract] The meeting was held in Eger, 12 May 76. Large scale methods of animal farming brought about the problem of by-products. The recycling of liquid manure is economical but any hygienic problems must be eliminated. These problems and their solutions include: a) noxious gases formed in the stables - controlled by frequent syphoning off, neutralization, filtration, b) possible infections harbored by the liquid manure - anaerobic conditions, aerobic biological purification, dampening of the solid phase, direct heat treatment, radiation, chemical disinfection. Liquid (swine) manure may be utilized in fishponds, under increased hygienic control of the fish and also, mostly, as soil  
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HUNGARY

KOVACS, Tibor, Dr., MAGYAR ALLATORVOSOK LAPJA Vol 32, No 8, Aug  
76 pp 546-547

fertilizer provided that any fodder crop in contact with it is carefully decontaminated. Results of a study of bacterial survival and disinfection of liquid manure were discussed by Dr. TAMASI. E. coli and Staphylococcus are rapidly destroyed in the manure while Salmonellae may survive for 6-1 months at 20°-4° C, respectively. The chemical composition of liquid manure also greatly influences survival. Sun, rain, humidity tend to decrease bacterial survival. UV and gamma rays gave encouraging results while chemical disinfection was too costly. Dr. KOHAZI spoke of experiences with the use of liquid manure in Heves Megye. No references.

USSR

UDC 619:616.995.42-084

BERDIYEV, A., Institute of Epidemiology and Microbiology im. N. F. Gamaleya

ECOLOGICAL BASIS OF IXODID TICK CONTROL

Moscow VETERINARIYA in Russian No 7, 1976 pp 71-74

[Abstract] The large-scale, systematic use of acaricides to control ticks in Turkmenistan is generally ineffective, expensive, dangerous to animals and humans, and likely to build the arthropods' resistance to these agents. Much more effective is an approach based on the ecology of individual tick species and judicious application of chemicals. For example, stall-pasture ticks are best controlled by keeping the stalls and feed boxes clean, not allowing manure and garbage to collect near the stalls, exterminating rodents, etc., and driving the cattle to temporary summer pastures and keeping them there until the short-lived stable imagos die off. The animals are dusted with acaricides only when it is impossible to drive them from heavily infested to relatively little infested pastures. Pasture-burrow ticks are more difficult to control because their hosts are wild animals widely distributed in all climatic

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USSR

BERDIYEV, A., VETERINARIYA No 7, 1976 pp 71-74

regions of the republic. The animals can be protected against these ticks by changing pastures according to the season and the natural biotope to which the land belongs. Ten areas differing in tick infestation can be distinguished in Turkmenistan (sandy desert, abandoned fields, river valleys, mountain slopes, etc.). Figure 1.

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USSR

UDC 633.2/.4.003(47 + 57) + 636.085

INCREASING THE FEED BASE IS AN URGENT TASK

Moscow ZHIVOTNOVODSTVO in Russian No 4, Apr 76 pp 1-9

[Abstract] In responding to the 25th Party Congress Directives on agriculture, the editors discuss projected plans for developing animal husbandry in the coming Five-Year plan. All republics have in the past five years been striving to improve feeding and breeding, accommodations and mechanization, application of technology and industrial methods in meat production. Statistics show steady improvement, but many additional measures should be undertaken, including increased emphasis on green forage and legume crops, and increased corn yields. The Five-Year plans being prepared by individual collectives call for, among other advances, preparation of high quality feeds and their distribution and storage at the level of the individual farm. Hay, silage and chopped grasses are now collected in spring, followed by different feeds later in the growing season. Increased emphasis is to be placed on machinery and equipment in all stages of the feeding process. New advances in technology must be applied in preparing and storing feeds. In certain areas of the

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USSR

ZHIVOTNOVODSTVO No 4, Apr 76 pp 1-9

Soviet Union, known technology has been ignored with unfortunate results. Granulating and briquetting of feeds can also help increase the nutritional content of stored feeds, and these methods must be applied. Balancing of protein and amino acid content of feeds will also result in improved effectiveness. New advances also will involve utilization of synthetic nitrogen compounds as substitutes for protein in feeds. A urea concentrate form, produced by extrusion, can produce the best results. Increases in its availability will come with mechanization of processing and storage.

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USSR

UDC 636.22/.28.033.003(47+57)

CHERKASHCHENKO, I. I., Professor, doctor of agricultural sciences, BAKHMATOV, L. P., candidate of agricultural sciences, All-Union Institute for Animal Husbandry

INTENSIVE FEEDING IS THE CHIEF WAY TO INCREASE THE EFFICIENCY OF BEEF PRODUCTION

Moscow ZHIVOTNOVODSTVO in Russian No 5, May 76 pp 66-73

[Abstract] Special interest is being devoted to the Spotted Black Breed of cattle, which is in third place after Zimmental and Red Steppe cattle, for beef production, in the Russian Federation. For increased efficiency, expansion of cooperation between collective farms is required both in breeding and in feeding horned stock for high meat production. The Safonovskiy collective farm in Moscow Oblast conducted an experiment in intensive feeding, dividing the stock into age groups of 0-6 months, with controlled environment and two daily feedings, 6-12 months, in pens of 15-18 head, and finally from 12 months to slaughter. Results achieved with bulls, steers and heifers were also recorded, and indicated that with the same rations, bulls required more feed

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USSR

CHERKASHCHENKO, I. I., ZHIVOTNOVODSTVO No 5, May 76 pp 66-73

per unit of weight gain than either steers or heifers. Results demonstrated that intensive feeding of beef animals in restricted environments had a major effect on meat production parameters. Quantity was increased and the quality of the meat, in terms of tenderness, color, and taste, was also improved. The Spotted Black Breed bulls reached 400 kg in 12 months, and 500 kg in 15 months. Tables 6.

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USSR

UDC 610:616.988.75.614.4:636.22/.28

SOLOV'YEV, B. V., FOMENKO, N. V., and PETROVA, I. A., Moscow Veterinary Academy and Volgograd Oblast Agricultural Administration

# FREEING A FARM FROM INFECTIOUS RHINOTRACHEITIS OF CATTLE

Moscow VETERINARIYA in Russian No 7, 1976 pp 52-55

[Abstract] On a farm raising imported Hereford cattle, an epizootic of infectious rhinotracheitis broke out in March 1973 that was not brought under control until 2 months later. In September, symptoms of the disease reappeared in all the animals; the antibody titers were found to be low,  $1.62 \log_2$ . Quarantine was instituted and the animals were inoculated with virusvaccine from the attenuated Rhinovac strain. Calves under 4 months of age received specific immunoglobulin. Within 2 months the antibody titers in the vaccinated animals rose to an average of  $2.94 \log_2$  and after 3 months only about 15% of the animals had residual symptoms of the disease (mild rhinitis, hyperemia of the mucosa of the eyes and vagina). The antibody titers in the calves that received immunoglobulin varied from 1 to 5  $\log_2$  by day 14. Calving and mating after vaccination were normal. No evidence of the circulation of the causative

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USSR

SOLOV'YEV, B. V., FOMENKO, N. V., and PETROVA, I. A., VETERINARIYA No 7, 1976 pp 52-55

agent of the disease could be found 12 months after vaccination. Figure 1; references 12: 3 Russian, 9 Western.

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USSR

UDC 619:614.9:543.063:628.3

SADYKOVA, V. I., All-Union Scientific Research Institute of Veterinary Sanitation

DETERMINATION OF THE NUMBER OF MICROBES IN SEWAGE

Moscow VETERINARIYA in Russian No 7, 1976 pp 38-39

[Abstract] The author describes a method of counting microbes in sewage as a means of monitoring treatment plants. A given sample is filtered (through glass) and the filtrate cultured in test tubes with a special medium (Divco agar 1%, peptone 1%, yeast extract 0.5%, glucose 0.1%) and incubated. The medium is melted in a water bath and dissolved with special solubilizers, after which the number of microcolonies is counted in a celloscope. The microcolonies must not be larger than the mechanical particles. This requires filtration of the culture material, media and solvents, selection of the optimum medium and incubation conditions. A comparison of the celloscopic and dish methods revealed the former to be 20 to 30 times quicker than the latter and just as accurate.

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USSR

UDC 619:614.94:624.041:636.083.1

RODIN, V. I., All-Union Institute of Veterinary Sanitation, and ARKHIPOV, G. I., Gipronisel'khoz (All-Union Planning and Research Institute for the Planning of Standard and Experimental Agricultural Production Centers and Establishments for Storing and Processing of Grain)

VETERINARY PROTECTION OF INDUSTRIAL COMPLEXES

Moscow VETERINARIYA in Russian No 7, 1976 pp 32-35

[Abstract] The intensification of livestock production in the Soviet Union in recent years led to the building of large complexes to accommodate the animals. The experience with the first complexes has shown that bringing together large numbers of animals in a limited area is dangerous to their health because of decreased resistance due to "travel stress," unfamiliar feeding and maintenance conditions, easy spread of disease, etc. Several conditions must be met if the animals are to be protected and their productivity ensured: (i) proper choice of a site for the complex (distance from supplier farms, topography, closeness to streams, etc.); (ii) creation of a special protective

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USSR

RODIN, V. I., and ARKHIPOV, G. I., VETERINARIYA No 7, 1976 pp 32-35

zone around the complex; (iii) zoning the site and placement of buildings according to the "black-and-white" principle (spatial and functional separation between the production area and the surrounding land); (iv) organization of production in such a way as to minimize contacts during the movement of people, animals, feed, and transport; (v) organization of veterinary measures, including prevention of disease, treatment of sick animals, cleaning, disinfection, deratization, storage and removal of carcasses. Another principle: the animals should come from as few supplier farms as possible and these farms should be free from acute and chronic infectious diseases. Figure 1.

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USSR

ZHUKOV, N., BEL'KOV, G., MOROZOV, N., Bratsk Fattening Ground, All-Union Institute of Beef Cattle Breeding, and Rostov Oblast Veterinary Department

#### VETERINARY SERVICE OF A FATTENING GROUND

Moscow VETERINARIYA in Russian No 7, 1976 pp 9-12

[Abstract] The Bratsk Fattening Ground in Rostov Oblast, now in operation for 2 years, can accommodate as many as 23,000 head of cattle a month. To cope with the health problems of the animals, the veterinarians not only keep them under close observation, treat disorders that may arise, supervise the feeding and maintenance arrangements, check on sanitation, etc., they extend their activities to the farms that send their animals to the fattening ground. They vaccinate the animals against anthrax, foot and mouth, and other diseases, treat them for parasites, dehorn young steers scheduled for fattening, check transport vehicles, and inject animals with tranquilizers before shipment in order to prevent "travel stress."

1/1

USSR

SMIRNOV, I., professor, honored activist of science, UkrSSR

ANABIOSIS, CRYOBIOLOGY AND LIVESTOCK RAISING

Moscow NAUKA I ZHIZN' (Science and Life) in Russian No 8, Aug 76 pp 24-27

[Abstract] The author discusses the advantages of deep-freeze sperm preservation, for example, ability to fertilize with sperms of an excellent donor, long deceased. Noting the achievements of the Western scientists, he claims that the Soviets are really the forerunners in this field. The author himself produced the first artificially inseminated offspring of rabbits and lambs back in 1947 and 1950 respectively. Two photographs, no tables or references.

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## Publications

USSR

SKRYABIN, G. K., and GOLOVLYEVA, L. A., Reviewers

BOOK REVIEW; MIKROBNAYA DESTRUKTSIYA SINTETICHESKIKH ORGANICHESKIKH VESHCHESTV (Microbial destruction of synthetic organic substances) by ROTMISTROV, M. N., GVOZDYAK, P. I., and STAVSKAYA, S. S. Publisher: Naukova dumka

Moscow MIKROBIOLOGIYA in Russian Vol 45 No 3 May/Jun 76, p 564

(Abstract) The subject monograph begins with a brief review of the present status of environmental protection, a situation which has justified publication. Topics covered include microorganisms and the biosphere, adaptive changeability of bacteria, systematic and physiological activity of microorganism destructive agents, literature data on mechanisms and pathways of destruction of undesirable chemicals (especially, halogen-organic and nitrogen-containing synthetic products). The authors suggest an appropriate program for exploitation of bio-degradation. The monograph is positively evaluated in that it has corrected an absence of Soviet publications on the subject.

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USSR

SHISHKOV, V. P., Academician, VASKHNIL (All-Union Order of Lenin Academy of Agricultural Science imeni V. I. Lenin)

PREVENTION OF DISEASES OF AGRICULTURAL ANIMALS IN INDUSTRIAL ANIMAL HUSBANDRY

Moscow PROFILAKTIKA BOLEZNEY SEL'SKOKHOZYAYSTVENNYKH ZHIVOTNYKH V PROMYSHLENNOM ZHIVOTNOVODSTVE in Russian 1975 320 pp

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HYGIENE AND OCCUPATIONAL DISEASES

Riga GIGIYENA I PROFESSIONAL'NYYE ZABOLEVANIYA in Russian 1974 193 pp

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PORUTSKIY, G. V.

BIOCHEMICAL PURIFICATION OF WASTE WATERS OF ORGANIC PRODUCTION OPERATIONS

Moscow BIOKHIMICHESKAYA OCHISTKA STOCHNYK VOD ORGANICHESKIKH PROIZVODSTV in Russian 1975 256 pp

[Excerpt] Annotation

This book gives the chemical composition and microbiological characteristics of waste waters of basic organic chemical production operations. The methods of aerobic and anaerobic purification of waste waters containing hydrocarbons, alcohols, phenols, aldehydes, ketones, synthetic fatty acids, ethers, surface active substances, and multifunctional compounds are studied. There are descriptions of equipment and methods for the control and intensification of biochemical purification of waste waters; the significance of modeling biochemical purification processes is shown.

The book is intended for chemical engineers, microbiologists, medical and other specialists in the area of industrial sanitation and hygiene, and also for all engineering-technical and scientific workers in the problems of environmental protection.

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PORUTSKIY, G. V., BIOKHIMICHESKAYA OCHISTKA STOCHNYKH VOD ORGANICHESKIKH  
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USSR

FEDORENKO, V. I., ORLOV, YE. N., and SOROKIN, YU. G.

FOR SAFE AND HEALTHY WORK CONDITIONS

Moscow ZA BEZOPASNYYE I ZDOROVYYE USLOVIYA TRUDA in Russian 1975 224 pp

[Excerpt] Annotation

On the basis of work experience of trade union organizations, this book gives practical recommendations for intensifying control of active trade union members over the implementation of measures for improving work conditions, and over safety equipment and production sanitation.

This book is an aid to FZMK [Factory, plant and local committee] of enterprises in the petroleum refining, petrochemical, and chemical industries, and to public inspectors and members of commissions for the protection of labor as well as to trade union activists participating in work on the protection of labor. It can be used by technical inspectors of trade unions and students of higher educational institutions and technical schools.

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USSR

FEDORENKO, et al, ZA BEZOPASNYYE I ZDOROVYYE USLOVIYA TRUDA 1975 224 pp

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USSR

616.V1 D17

DANIYAROV, Sanzharbek Bakirovich

LUCHEVAYA BOLEZN' I SERDECHNO-SOSUDISTAYA SISTEMA (Eksperimental'nyye issledovaniya) [Radiation Sickness and Cardiovascular System (Experimental Investigations)] in Russian "Kyrgyzstan" Frunze 1974 236 pp

[Excerpts] Annotation

The monograph presents a thorough analysis of a large experimental material and of the data from the relevant literature on the functional state of the cardiovascular system and changes in its regulating mechanisms which are in a large degree responsible for the maintenance of homeostasis during the latent period of acute radiation sickness.

Separately are examined the relations between parasympathetic and sympathetic portions of the autonomic nervous system in the process of radiation injury and on the basis of the analysis of the data obtained a theory is advanced that the adaptation reactions of the organism to the action of ionizing radiation are realized through intensification of the function of the sympathetic nervous system and a relative decrease of tonic influences of the vagus nerve on the heart.

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USSR

DANIYAROV, S. B., LUCHEVAYA BOLEZN' I SERDECHNO-SOSUDISTAYA SISTEMA 1974 236 pp

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DANIYAROV, S. B., LUCHEVAYA BOLEZN' I SERDECHNO-SOSUDISTAYA SISTEMA 1974  
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DANIYAROV, S. B., LUCHEVAYA BOLEZN' I SERDECHNO-SOSUDISTAYA SISTEMA 1974  
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UDC 612.821

SUVOROV, N. F., and SUVOROV, V. V.

KHOLINOREAKTIVNAYA SISTEMA BAZAL'NYKH GANGLIYEV I USLOVNOREFLEKTORNAYA DEYATEL'NOST' [Choline-Reactive System of Basal Ganglia and Conditioned-Reflex Activity] in Russian Leningrad "Nauka" 1975 96 pp

[Excerpts] Annotation

The monograph expounds a hypotheses on the presence in the brain of a single choline-reactive system. The experimental data are adduced relative to the distribution of acetylcholine and connected-with-it enzymes in the cortex and subcortical structures. Works are analyzed concerning the determination of the level of acetylcholine and cholinesterase upon changes in the functional state of the brain and the relation of these indices to electroencephalographic indices. Results are summed up of the study of the conditioned-reflex activity upon various influences exerted on the central nervous system as a whole and on its individual structures. In this section of the monograph are given data obtained at the Laboratory of Physiology of the Higher Nervous Activity

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USSR

SUVOROV, N. F., and SUVOROV, V. V., KHOLINOREAKTIVNAYA SISTEMA BAZAL'NYKH GANGLIYEV I USLOVNOREFLEKTORNAYA DEYATEL'NOST' 1975 96 pp

of the Institute of Physiology imeni I. P. Pavlov of the USSR Academy of Sciences. The role is examined of the choline-reactive system of the brain in the inhibition of nonreinforced reactions and depression of the nonsignificant sensory entrance, and appraisal is also made of the possible mechanisms of interaction of individual links of the choline-reactive system of the brain in these processes. Illustrations 22; table 1; references 358.

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UDC 616.13--002.2.(23.03)(575.2)

ALIYEV, M. A., ZAKHAROV, G. A., and SHCHUKINA, M. Ya., Academy of Sciences  
Kirgiz SSR, Institute of Physiology and Experimental Pathology of High  
Altitudes

ADAPTATSIYA K VYSOKOGOR'YU PRI GORMONAL'NYKH NAGRUZKAKH [Adaptation to High  
Altitudes Under Hormonal Loading] in Russian Frunze "Ilim" 1975 129 pp

[Excerpts] Annotation

The monograph examines the physiological action of exogenous hormones ACTH,  
DOCA, and hydrocortisone under conditions of high altitudes and their role in  
the adaptation of the animal body to alpine conditions (3,200 m). The pecu-  
liarities of the effect of these hormones on the cardiovascular system,  
electrolyte metabolism and activators of the respiratory function of the  
blood are considered.

The monograph is intended for physicians and scientific workers.

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USSR

ALIYEV, M. A., ZAKHAROV, G. A., and SHCHUKINA, M. Ya., ADAPTATSIYA K VYSOKOGOR'  
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USSR

UDC 576.8.095.3:575.2:628.35

ROTMISTROV, M. N., GVOZDYAK, P. I., and STAVSKAYA, S. S.; Ukrainian SSR  
Academy of Sciences, Institute of Colloidal Chemistry and Chemistry of Water

MIKROBNAYA DESTRUKTSIYA SINTETICHESKIKH ORGANICHESKIKH VESHCHESTV [Microbial  
Destruction of Synthetic Organic Substances] in Russian Kiev "Naukova Dumka"  
1975 224 pp

#### [Excerpts] Annotation

The book provides general information on microorganisms and transformations produced by them in synthetic organic substances previously not encountered in nature. The great urgency of the problem of the protection of the biosphere from pollution with synthetic compounds and the leading role played by bacteria, fungi and actinomycetes in purification of water and soil bring about a necessity for extensive study of microbial destruction of various organic substances. The authors have for the first time generalized the data found in the foreign and Soviet literature concerning microbiological processes and microbes that render harmless the nitrogen-, halogen-, and sulfur-

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USSR

ROTMISTROV, M. N., GVOZDYAK, P. I., and STAVSKAYA, S. S., MIKROBNAYA  
DESTRUKTSIYA SINTETICHESKIKH ORGANICHESKIKH VESHCHESTV 1975 224 pp

containing synthetic organic substances which penetrate into our environment.

The book is intended for microbiologists, biochemists, and technologists interested in the problem of the protection of environment from pollution and purification of industrial effluents, as well as for teachers and students of biological VUZes.

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USSR

UDC 576.809.558:663.12

SHIGAYEVA, M. Kh., Institute of Microbiology and Virology, Academy of Sciences  
Kazakh SSR

SELEKTSIYA DROZHZHEY [Selection of Yeasts] in Russian Alma-Ata "Nauka" 1975  
151 pp

[Excerpts] Annotation

Among microorganisms the yeasts enjoy the greatest popularity in various  
branches of food industry.

The present monograph touches upon one of the most fundamental sections of  
applied microbiology, viz., the problem of selection of practically valuable  
yeast species, and description of various methods (adaptation, hybridization,  
action of physical and chemical mutagens), used to obtain yeast with new or  
considerably-enhanced properties sought by experimenters.

Alongside a brief review of investigations carried on in this field by  
both Soviet and foreign researchers, this book presents materials of scientists  
of Kazakhstan as well as the author's own investigations.

The book is intended for microbiologists, biochemists, plant breeders,  
technologists, and workers of food industry and agriculture.

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USSR

SHIGAYEVA, M. Kh., SELEKTSIYA DROZHZHEY 1975 151 pp

28 illustrations, 47 tables. Bibliography, including 320 Soviet and 84  
foreign references.

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SHIGAYEVA, M. Kh., SELEKTSIYA DROZHZHEY 1975 151 pp

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USSR

DEBORIN, G. A., PAVLOVSKAYA, T. Ye., DOZE, K., FOKS, S. (editors)

THE ORIGIN OF LIFE AND EVOLUTIONARY BIOCHEMISTRY (Anthology Dedicated to the 80th Birthday of Academician A. I. Oparin and the 50th Anniversary of the Appearance of His Book "The Origin of Life")

Moscow PROISKHOZHDENIYE ZHIZNI I EVOLYUTSIONNAYA BIOKHIMIYA in Russian 1975 404 pp

[Excerpt] Annotation

In recent years the science of the origin of life has become broad and well known. Scientists from many specialities are working on its problems. The present anthology, dedicated to the 80th birthday of Academician A. I. Oparin and the 50th anniversary of the appearance of the first edition of his book "The Origin of Life" contains articles by Soviet and foreign authors working in this area. These articles discuss the most pressing problems in the theory of the origin of life, sum up results of experimental research, mainly in the

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USSR

DEBORIN, G. A., et al, PROISKHOZHDENIYE ZHIZNI I EVOLYUTSIONNAYA BIOKHIMIYA  
1975 404 pp

area of chemical evolution, and present various points of view on a whole series of disputed and uncertain problems. In general, the book gives a sufficiently full picture of the present state of the problems of the origin of life and directs attention to problems requiring further discussion.

The anthology is intended for everyone interested in the problem of the origin of life, and its methodological, experimental, and theoretical aspects.

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## II. BEHAVIORAL SCIENCES

### Educational Psychology

USSR

PETROVSKIY, A., academician, USSR Academy of Pedagogical Sciences, doctor of psychological sciences: "Understanding the Psychology of the Collective"

#### STUDIES OF PSYCHOLOGY OF PERSONALITY IN COLLECTIVE DISCUSSED

Moscow UCHITEL'NAYA GAZETA in Russian 9 Sep 76 p 3

[Text] Today it makes no sense to demonstrate the importance of the knowledge of psychology for the educator--this is the axiom of pedagogical labor. The teacher is concerned rather with something else--how to bridge the indisputable truth contained in psychology textbooks and the daily tasks that arise before him in his association with school children. A pedagogical institute provides specific knowledge of psychology, but its applied branches--they are now developing at an especially rapid rate--have not yet opened a pedagogical practice for themselves.

One of such branches--social psychology, which studies the basic patterns in interpersonal relations in groups and collectives--has not by any means yet been adopted by teachers.

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USSR

PETROVSKIY, A., UCHITEL'NAYA GAZETA 9 Sep 76 p 3

The Laboratory of "Psychological Research on Personality in the Collective" of the Order of the Red Banner of Labor Scientific Research Institute of General and Pedagogical Psychology of the USSR Academy of Pedagogical Sciences, which I direct, was established 5 years ago and its task is to study the social psychology of the collective.

The process of education is carried out in the collective and with the help of the collective--this is a well-known truth. However, what does this tool of the education of personality represent psychologically? Does the word "tool" not sound too technological?! After all, the collective represents living and very different people connected by a complicated system of interpersonal relations, striving toward one goal, but prepared to realize it by different methods. At the same time, if we understand the general patterns in the formation and functioning of the collective, we can determine the level of its development. This is important for the following reason: Often it is necessary to realize, and promptly at that, whether we have a collective, or an accidental and unstable association of people externally connected, but

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PETROVSKIY, A., UCHITEL'NAYA GAZETA 9 Sep 76 p 3

internally indifferent to each other. To realize means to acquire the possibility of purposefully and effectively affecting the personality and, if needed, reorganizing the entire psychological climate of the collective.

In the solution of the problems relative to the psychology of the collective at first it seemed tempting to us to base ourselves on the truly countless number of investigations of group interaction conducted by foreign, mainly American, scientists. However, rendering the methodological inventiveness of American psychologists its due and taking into consideration the data obtained by them, we could not agree with their general methodological positions, or with the model of interpersonal relationships that they took as initial for their structures.

In capitalist countries psychologists do not single out the collective among other human communities and do not see its qualitative uniqueness, dissolving its psychological characteristics in the characterization of the "group in general." In fact, however, it turns out to be an accidentally gathered and diffused group not unified by a common purposeful and socially significant activity.

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PETROVSKIY, A., UCHITEL'NAYA GAZETA 9 Sep 76 p 3

In connection with this we advanced the hypothesis whose productivity has now been confirmed not only in the laboratory, but in a forming sociopsychological experiment. The essence of this hypothesis lies in the following.

When entering into an association and interaction, people can discover two types of relationships. In some cases interaction can be based on direct relations: likes or dislikes, pliability to the influence of other people or stability, active sociability or reserve. Such an interaction predominates in some groups. For example, this is the case when common goals, tasks and values (ideals, convictions and evaluations) are lacking or are weakly pronounced.

In the other case interaction is of an indirect nature, when the relations among group members are determined by the values and principles important for all the tasks and goals of joint activity accepted in the group. According to our hypothesis, this type of interaction is characteristic of collectives, that is, the types of groups unified by common socially significant values, goals and tasks of activity.

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Therefore, it is impossible to apply the patterns operating in a diffuse group to the collective. Of course, indirect relations (likes of some people and dislikes of others, greater or lesser sociability and contacts and so forth) are also possible in it. But they form only a superficial layer of the multilevel structure of the psychology of the collective. Deep layers, where an interpersonal interaction is determined by the content of joint activity, form the basis.

Let us see what this means for the solution of the problem concerning the attributes of a true collective, a problem important to the pedagogue. Of course, everyone has a general idea of what a closely knit collective means. It is characterized by mutual help and assistance, constructive criticism, striving for mutual experiences, persistence in the attainment of goals and other qualities. All this is so. However, it is not a matter of a descriptive characterization of the collective. There is a need for an experimentally verified qualitative and quantitative evaluation of its real unity.

Coefficients proposed by psychologists, who do not see a difference between the collective and the diffuse group, have been used thus far. Viewing the

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group mechanically, as a certain number of indirectly interacting people, essentially, they have identified the unity of a group with the contacts among its members.

However, lively contacts in a group do not yet mean unity. For example, a lively group association can prove to be connected with the activization of forces objectively directed toward dissension, not unity. Teachers are well aware of the fact that in some classes, where there are individual hostile groups of school children, the number of various contacts increases. There is an exchange of notes, whispering during classes, volatile conferences during recesses, direct and indirect threats to each other and so forth. Contacts increase, but the unity of the collective diminishes.

Other approaches to revealing the unity of the collective and other methods of measuring it were proposed in our laboratory. The hypothesis that great solidarity as a value orientation unity of the collective emerges in groups united by a prolonged joint activity was advanced and confirmed experimentally. The extent of frequency of the coincidence of the evaluations or positions of the members of a collective with regard to objects (goals of activity, its content and participants, moral principles and so forth) of great importance

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for the collective as a whole serves as the coefficient of unity.

Of course, this does not presuppose a coincidence of evaluations and positions of group members in all respects, or, for example, the levelling of the personality in the sphere of taste for sports and reading interests and so forth. Conversely, differences in this sphere by no means hamper the unity of the collective, at the same time, making the association among its members richer and more interesting.

However, if some believe, for example, that the task set for them cannot be fulfilled, or that they can altogether shirk the task entrusted to them and others have an opposite view--and such differences are typical of this group--there can be no question of any unity.

If we take into consideration how important it is for a class teacher to orient himself in the real level of unity of a children's collective, the importance of objective indicators of the value orientation unity becomes obvious. The unified collective can cope with difficulties more easily, work as a team, create the most favorable possibilities for developing the personality of each of its members and be preserved as a whole under various,

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including unfavorable, conditions.

To understand the psychology of the collective, it is also important to take the facts of intragroup differentiation into consideration.

So-called sociometric methods, which are comparatively simple and accessible for practical utilization, have become quite widespread in the last few years. Their essence is the study of the results of questioning members of a group who are faced with the task of indicating the individual meeting specific conditions in a descending sequence. The results are processed mathematically and expressed graphically.

Sociometric "stars," that is, individuals who are most often "selected" in a given group (very many students would like to sit with them at the same desk, to spend their free time with them, to invite them to their birthdays and so forth), as well as "outcasts" or "isolated individuals" not selected by anyone, are revealed in this way.

This method is very efficient and by means of it it is possible to quite quickly reveal the picture of emotional preferences within any group. Incidentally, a teacher would need a long time to reveal this through observations.

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Without doubting the certain expedience of sociometry in any way, nevertheless, we are not convinced that it will give a reliable description of group differentiation and will show "who is who."

When studying this problem, we first of all asked the question as to what stands behind the interpersonal selection. In fact, often it is much more important to know not that a given group member was selected by his peers, but why he was selected. The system of motives for interpersonal selection gives a more meaningful description of group differentiation.

How to reveal this system of motives, what we call the motivation nucleus of selection? When this question is formulated directly, obviously, it is difficult to hope for a sincere answer. Moreover, a school child himself may not realize why in some circumstances he prefers one child and does not accept another. Our associates proposed a special methodological technique of indirectly revealing the "secrets" of motivation for interpersonal selection. Its essence lies in comparing two rows, one of which is the row of preferable selections (instruction: put the person who would be the first with whom you would like to sit at a desk at the first place, the next, at the second place and so forth), and the others, the rows of evaluation of individuals according to specific qualities.

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Here is a simple example. It is suggested that a school child arrange the names of his fellow pupils in a certain order. The first row: from the wittiest, most lively and interesting--and as these qualities diminish--to the most boring and colorless in the class. The second row: from the one most inclined to allow the copying of his test or dictation, to prompt from his seat, to crib and so forth to the most scrupulous and implacable with respect to cheating. The third, fourth, fifth and sixth rows are constructed with respect to any other qualities of great importance in the student collective. Then these rows are compared with the row of preferences when a desk partner is selected. For example, the closeness of connections of this last row with the first row will show that the motivation nucleus of selection of this student includes personality traits of great importance for association. The closeness of an interpersonal preference to the second row makes it possible to assume that the hope for prompting is the basic content of the motivation nucleus of selection of a desk partner.

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Disclosure of the motivation nucleus of selection proves to be useful for the pedagogue and psychologist whenever the following questions arise: Why does a certain group member prefer so and so? Why is a certain part of the class considered to be in the category of "stars," and the other, among the "outcasts"? In brief, why is the sociometric picture of the class precisely such?

It was established experimentally that the content of the motivation nuclei of selection can also serve as an indicator of the level attained by a group as a collective. For example, at the initial stage of formation of a collective the attention of the boys and girls is directed mainly toward the external aspects of a fellow student (sociability, attractiveness, manner of dressing and so forth). However, at a higher stage of its development the selection is more and more directed toward the personal qualities manifested in joint activity and in acts important for the collective. The prestige of the qualities that characterize the world outlook and attitude toward labor, that is, the characteristics formed and manifested in labor activity, is enhanced.

We have now begun the study of so-called reference. It is connected with clarification of the circle of individuals important to a student, with whose opinion and position he often reckons unconsciously.

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This method can prove to be very promising for the practical needs of the educational process. In fact, in case of a serious advance of social psychologists in this direction (as yet we are at the beginning of the path) there will be the tempting possibility of helping the pedagogue, suggesting to him the "goals" for a selective educational effect. The pedagogical efforts applied to the student who is the "reference point" for those who gravitate toward him will make it possible to exert an indirect, but by no means less strong, influence on some of his peers as well. It is not ruled out that here lies one of the ways to overcome the false alternative of a "frontal" or "individual" pedagogical influence.

We are conducting research in many fields of study of the psychology of personality in the collective. Only a small part of it was discussed here. However, all of it is subordinated to one goal that is common for us, that is, the psychological substantiation of the processes of communist education.

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UDC 615.214.038

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USE OF PSYCHOTROPIC DRUGS IN SOMATIC MEDICINE

Moscow KLINICHESKAYA MEDITSINA in Russian No 8, 1976 signed to press 24 Nov  
75 pp 16-20

[Abstract] Reviewing the Soviet and foreign literatures on the use of anti-depressants, neuroleptics, and tranquilizers and her own clinical experience, the author discusses the following aspects of the drugs: (i) nature of the pharmacological effects of psychotropic agents that warrant their use in somatic medicine; (ii) the limits of justified use of the drugs in mental disorders; (iii) desirable approach to the prescription of the drugs in somatic hospitals and clinics; (iv) relative and absolute contradictions to the use of psychotropic agents. Dangers in prescribing antidepressants and tranquilizers for the elderly are stressed. References 11: 7 Russian, 4 Western.

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ON THE BIOCHEMICAL GENETICS OF THE INTELLECT

Moscow PRIRODA in Russian No 9, Sep 76 pp 62-73

[Abstract] Inherited biochemical characteristics play an important role in determining intellectual capacity. The introduction and first section of this article warns that biochemical factors should not be given excessive importance and that social factors play the primary role in determining mental capacity. Three biochemical-medical phenomena are examined: gout, Marfan's disease, and Morris' syndrome. Gout is examined in the most detail. The studies of H. Ellis and ME. F. Mueller and G. W. Brooks are examined. Gout is caused by excessive uric acid in the blood. Mueller and Brooks, in their study of professor at the University of Massachusetts (1927) showed a correlation between uric acid levels and several professional characteristics such

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as intensity of activity, productivity and self discipline. Ellis' study showed that gifted people were afflicted with gout at a rate 5-10 times higher than the average. Many historical examples of famous individuals who suffered from gout are given, beginning with ancient Greece, moving through the history of the middle east, Asia, and especially Europe. A table presents data on gout and giftedness found in several Western studies. The relationships of Marfan's disease and Morris' syndrome are briefly examined. It is stressed that gifted people are only making better use of capabilities inherent in the vast majority of people. Tables 1; references 15: 3 Russian, 12 Western.

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#### PHYSIOLOGY AND GIFTEDNESS

Moscow PRIRODA in Russian No 9, Sep 76 pp 73-77

[Abstract] Should the possession of extraordinary talents be considered an abnormality? Does genius go hand in hand with psychiatric disorder? E. Kretschmer, in his study on genius, emphasized this relationship. Efroimson's article [this journal, pp 62-73] is discussed. His approach is a partial one, not taking social and educational factors into consideration. Some of the correlations in the studies of professors at the University of Massachusetts are not that strong. Efroimson is not really criticized, rather the limitations of this approach are pointed out. The problem of genius is then approached from the perspective of conditioned reflex theory. In the 1930's L. P. Krushinskiy found that some animals lack important defensive reflexes because their inherited general level of excitability was very low. A study

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made of scientists in Petrograd (Leningrad) in the 1920's showed many of the members of the families of gifted people had psychological problems. Giftedness may thus be due to the improper channeling of a higher level of psychological excitability. Although it is simplistic to assume that biological factors play a decisive role in determining human talents, a materialist view of biological phenomena gives room for individual differences. References 7: 4 Russian, 3 Western.

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